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R. E. Anderson See page 81

Price-Minus Contracts Speed the Ship Program

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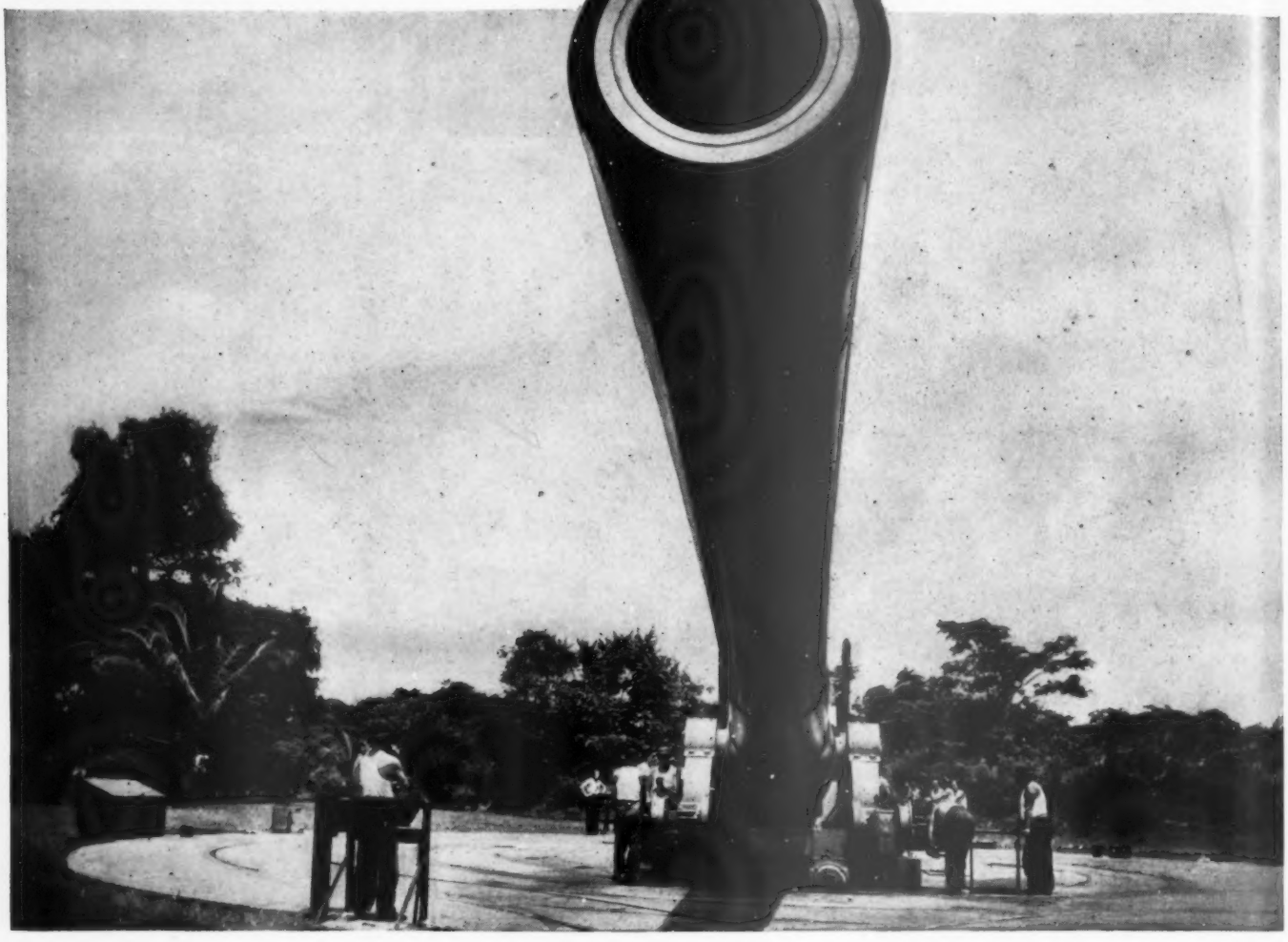
INDUSTRY'S BIG GUN



THIS 16-inch coast defense gun weighs 900 tons, is 68 ft. long from breech to muzzle, and hurls a 2,000-lb. projectile 30 miles.

Manufacturing large-calibre rifles similar to this represents only one of thousands of production problems which require the services of lubrication engineers and high-quality lubricants.

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★ More locomotives and railroad cars in the U. S. are lubricated with Texaco than with any other brand.

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TUNE IN FRED ALLEN EVERY SUNDAY NIGHT—CBS ★ HELP WIN THE WAR BY RETURNING EMPTY DRUMS PROMPTLY

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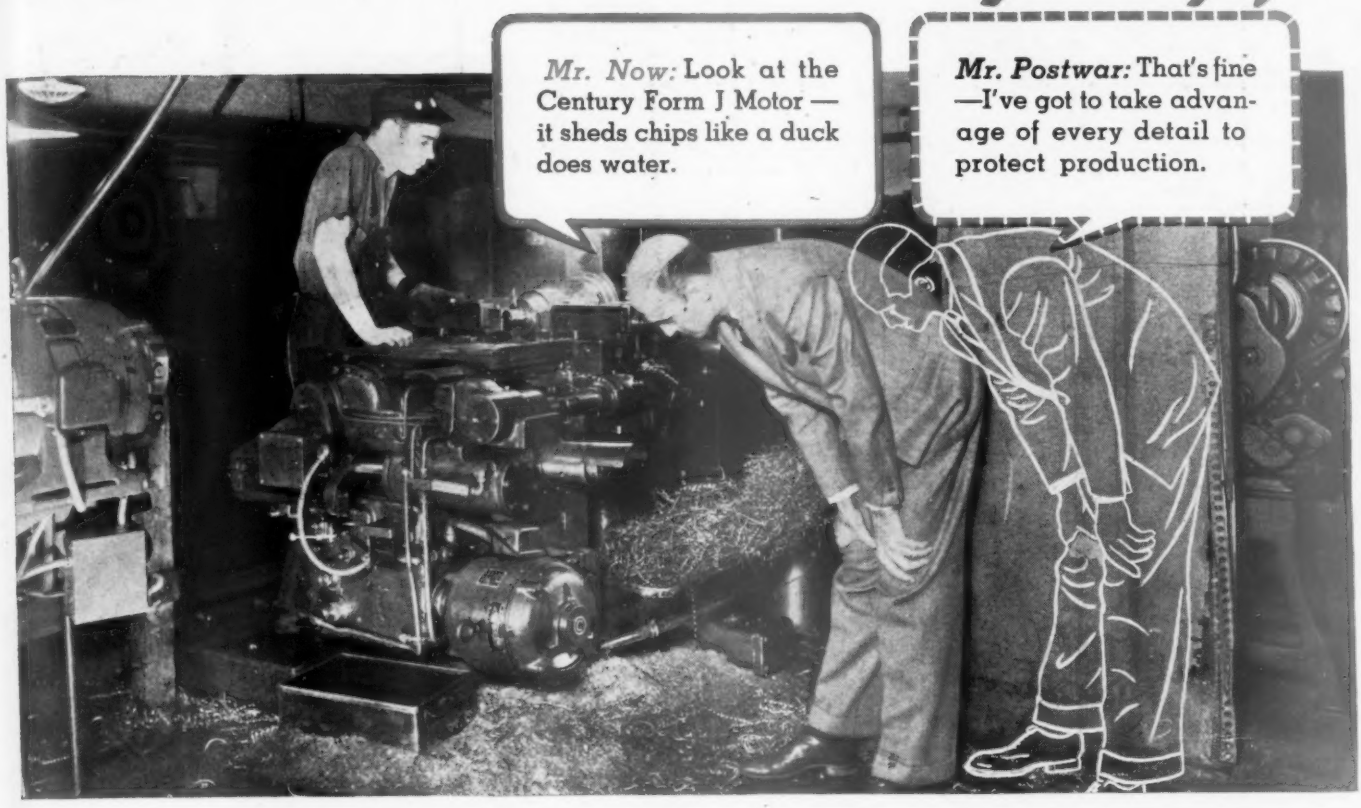
Mr. Now: Look at the Century Form J Motor — it sheds chips like a duck does water.
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Developed especially to assure greater protection than the usual open motor, Century Form J, General Purpose Motors have a protecting hood over the upper half of the motor, preventing falling solids or dripping water from entering vital motor parts. This is particularly advantageous when motors are installed *below the work level* on machine tools — constantly exposed to falling chips of metal.

This extra protection is made possible by Century's scientifically designed ventilation system which gives positive cooling to motor windings and bearings and assures rapid heat dissipation.

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TAKE IT? – you bet they can take it . . . and so can their equipment

TOUGH STUFF — paratrooping! These boys with the "big umbrellas" have to be able to stand the gaff . . . and so does their equipment.

And so does the equipment that brought them to the jump-off place! Let one little gadget in a paratroop plane go wrong . . . let one engine overheat . . . let a minute instrument cease to function and the whole air-borne unit is endangered.

Rubber parts — crude or synthetic — play a big, important role in getting the boys there and landing 'em easy. Valves, sleeves, pipeline connections, instrument coverings, cushioning instruments . . . all must fit precisely, perform perfectly, serve faithfully and consistently under the most exacting conditions.

We are privileged to have had a hand in producing several of those parts. Long experiment and painstaking research into the properties of new synthetic compounds — as well as years of experience in the precision-molding of crude rubber goods — have made possible our ability to satisfy the high standards and low tolerances required.

All we have learned is at your disposal, to help solve your problems when need arises.

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"We could lose this War between 5 p.m. and 7 a.m."

JOHN BLAZEK, the author of this remarkable statement, is the production manager of a war-material plant in a midwestern city.

"I'M no pessimist. But I'm telling you the hours between sunset and sunrise can be the most critical hours of this war. Not on the battlefronts, but in the factories and shops where they're making the things our boys must have to win the final victory.

"My factory has been working on important war contracts. Daytime production was as good as could be expected. But night production was 40% behind schedule. The employees worked just as hard. They seemed more tired than the day crew. But they weren't making the grade.

"I knew a dozen things might be wrong, but I had an idea one trouble might be the lighting. So I called in a lighting man and put it up to him.

"He made a careful study. Then he showed me what *was* wrong with the lighting, particularly as it affected the night workers. I was willing to try *anything* that might help, so we made the changes he recommended. Today, under the new improved lighting, our night shift workers are running neck and neck with the rest.

"I don't know how many other plants have been having this same trouble. But if production generally is lagging behind on the night shifts—those hours between 5:00 P. M. and 7:00 A. M.—*we could lose this war.* Unless we do something about it right away.

"As one production man to another, all I know is, if you're having night shift trouble, one thing you'd better check up on is your lighting. It may help you. It certainly helped us."

☆ ☆ ☆

If you are running a war factory, won't you have your lighting checked? Call the nearest G-E lamp office. Or see your electric service company or your G-E lamp supplier. Or write General Electric Company, Nela Park, Cleveland, Ohio.

G-E MAZDA LAMPS

GENERAL ELECTRIC

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. . . to meet your production schedules!

You can now convert to SPEED NUTS to help meet your production schedules ON TIME. SPEED NUTS are approved by the U. S. Army Air Forces and the Bureau of Aeronautics for non-structural attachments on military aircraft. They are also used on jeeps, trucks, tanks, P. T. Boats and other war equipment. This provides a more abundant source of approved self-locking nuts to relieve the present shortage.

Our Engineering Dept. will be glad to assist you in determining the proper approved locations where Speed Nuts may be used. Request for information or assistance will receive immediate attention.

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IN ENGLAND: Simmonds Aerocessories, Ltd., London

Speed Nut System

THE FASTEST THING IN FASTENINGS

Now O. B. A. speeds threads through "finishing school"

THEY'RE getting better ordnance faster today because so many tedious thread-cleaning jobs have been shouldered by Osborn power-driven Brushing Wheels. Here's an example:

At a midwestern plant doing close-tolerance ordnance work Osborn Brushing Specialists were conducting an O.B.A. (Osborn Brushing Analysis) to determine exactly where and how brushing could improve quality and step up production. They found a frantic search going on for a method of removing burrs and metallic fuzz from a threaded part so that it would "spin-down" on the inspectors' ring gauges, and still hold tolerances as required. To get clean, smooth, free-running threads the shop had tried every practical cleaning method they knew of, but without success.

The Osborn men suggested a standard Monitor Section Brushing Wheel with fine, crimped wire. Tests were run off immediately. Not only did the brushed part pass the "spin-down" test, but the operator found he could finish half a dozen pieces in the time it took to finish one by the fastest previous method.

Osborn maintains Brushing Specialists in every section of the country to aid in solving burring, cleaning and finishing problems for war plants. For details of the O.B.A. (Osborn Brushing Analysis) or help on specific operations, get in touch with the Osborn representative in your district. *The Osborn Manufacturing Company, 5401 Hamilton Ave., Cleveland, Ohio.*

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MADE in all sizes and shapes there is a Macklin Grinding Wheel for every type of grinding job that will show cost-saving results and *"Protect Your Production."* An experienced Macklin Field Engineer is available at all times for the asking—*no obligation.*

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PAN AMERICAN'S famous Clipper Ships are spanning the oceans, uniting the world and carrying important goods of commerce and vital ones of war! Sometimes landing in a jungle cove, sometimes on a sun-baked desert, these great planes must carry their cargoes fast, must carry them light. Many of the Clipper cargo shipments are packed in MASON MAILMASTERS, which permit a handy, one-packaging operation that not only protects the product but saves shipping costs. Investigate MAILMASTERS for your small parts shipping, and see the saving, protection, and ease with which this famous Mason Box product can help you.

A Pan American Airways System employee packing vital radio replacement parts in Mason Box MailMasters at one of the Southern Terminals of this famous Air Line.

The MASON BOX COMPANY
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FOR YOUR PLANT

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☐ **1. STEEL STRAPPING** for wartime shipping.—Twelve page folder describes use of steel strapping for cartons, boxes, fuel tanks, sheel tubes, bales, and a blast furnace. It imparts ideas on how to use strapping to advantage. Acme Steel Co.

☐ **2. ACETYLENE GENERATORS** — Page circular describes portable high pressure acetylene generators for welding, cutting, brazing, and soldering. Gas cost said to be less than one cent per cu. ft., giving high quality flame and constant, even pressure. Adler Manufacturing Co.

☐ **3. BALL BEARINGS.** Reconditioning: Procedure in renewing worn ball bearings is described in 16-page book. It tells how a bearing is renewed to give exactly the same kind of service it gave as a new bearing. Ahlberg Bearing Co.

☐ **4. COMPRESSORS** and Vacuum Pumps —Compressors and pumps of the sliding vane type are illustrated and described in new bulletin describing Ro-Flo design. Book makes the Ro-Flo and its operation easy to understand. Engineering description is supplemented by installation diagrams, and other data. Allis-Chalmers Mfg. Co.

☐ **5. WELDING-BRAZING ALUMINUM** — This 100-page pocket-size book tells how to correctly use and work aluminum. Explains thoroughly important commercial welding methods, and newly developed joining methods of brazing aluminum alloys. Shows how to conserve aluminum and speed production. Copies free. Aluminum Company of America.

☐ **6. WELDING MOVIES**—"How to Weld Aluminum" is subject of 36 minute, black and white, sound motion picture, showing methods employed in torch welding, arc welding, resistance welding and brazing aluminum. Other pictures in series are "How to Rivet Aluminum" and "How to Machine Aluminum." Only charge for use of these films is transportation costs. Ask for further details. The Aluminum Company of America.

☐ **7. MACHINING COPPER** and Copper Base Alloys—New 32-page booklet details cutting speeds, feeds, tool rakes, and clearances for basic machining operations including turning, parting, forming, drilling, tapping, milling, etc. Machinability ratings, composition, physical constants and properties on more than 40 copper base alloys are included. Booklet also includes weight tables, conversion factors and references to Standard Specifications. The American Brass Co.

☐ **8. PRECISION EQUIPMENT** — Thread and hole checkers, amplifying gages, bench center radius dresser and lapping plate for lapping flat surfaces requiring extreme accuracy, are described in recent issue four-page catalog. The American Gauge Co.

☐ **9. NATURAL RESINS** — Authoritative basic data on natural resins, their physical and chemical properties, their solubilities in a wide range of paint, varnish, and lacquer solvents and thinners; their compatibility with other resinous products, cellulose derivatives, waxes, pitches, drying and non-drying oils; their applications alone and in combination with other materials, are contained in 98-page, hard-cover handbook. Free. American Gum Importers Association, Inc.

☐ **10. CONGO RESINS** in Protective Coatings. This 36-page mimeograph on suggested applications of congo resin in protective coatings for the war effort and civilian uses is brand new. Contains numerous formulations that have given good results. American Gum Importers Laboratories, Inc.

☐ **11. ZINC COATED METAL**—Here's 26 interesting pages on specifying, ordering, fabricating and finishing Zinc-coated sheet metal—Zincgrip. Explains how savings are made by ordering coils, and deals with deep drawing, roll forming, brake forming, welding, etc. American Rolling Mill Co.

☐ **12. SPRAY BOOTHS** — Bulletin introduces new line of paint spray booth and dust collection systems. Units have been developed with a view to meeting high-speed industrial spraying requirements, with greater labor and fire protection safeguards. Aqua-Restor Division, Mayer Mfg. Corp.

☐ **13. HAND LOTION** for Women Workers —Dispensers at cost. Athea Protective Lanolin Hand Lotion it is claimed will give desired protection to hands, and keep skin soft and pliable. This waxless lotion is fully described in small folder. Athea Research & Processing Labs.

☐ **14. ELASTIC VINYL PLASTICS** — Their characteristics and uses are described 5-page article. Article covers replacing rubber for calendering, extruding, molding, etc., and chart shows properties of these plastics. Bakelite Corp.

☐ **15. COATED ABRASIVES**—16-Page book describes Spiracords, Pencils, Slotted Discs, Spirapoints and Spirabands. Explains how to get faster, better production with coated abrasives. Behr-Manning Corp.

(Continued on page 12)

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POP'S JUST READ "FILE FILOSOPHY"★

PLAYFUL AN' DOPEY ARE AT IT AGAIN! - LONG ON PATRIOTISM, BUT SHORT ON TOOLCARE-ISM...
LET'S PIN TOJO'S EARS BACK!
HERE'S ANOTHER STAB IN TH' EAR FOR THAT STAB IN TH' BACK, TOOTS!
WAIT'LL POP SEES TH' FILES THEY'RE ABUSIN' ARE NICHOLSONS! THESE HERE PRODUCTION GREMLINS WILL THINK A FLOCK OF NAZI STUKAS HAVE LAID EGGS IN THEIR HAIR!

SAYS Pop the Foreman, "Show me a mechanic who is careless with his tools and I'll show you one who is careless in his work."

Because a file has to be tough enough to bite castings, hard steels and what-not, it is too often assumed that it is immune to injury or abuse. Wrong.

Modern file teeth are designed for use on certain types of metal; to contact the metal under correct pressure on the forward stroke and little or none on the back stroke. When used contrary to this elementary formula, the teeth become prematurely dulled or chipped, and the file's serviceable life is shortened — perhaps by many thousands of strokes. But when used in the proper manner, a file can withstand an amazing amount of work-punishment.

And *improper care* is second only to improper use in file destructiveness. Neither is any way to conserve the tool steels so sorely needed for the nation's war effort. Both can be lessened through study of Nicholson's book, *"File Filosophy."*

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★ FREE to Production Heads

Not only does "File Filosophy" dwell liberally on the proper use and proper care of files, but it is an invaluable help in selecting *The right file for the job.* Many other interesting things are disclosed about files in this new book's profusely illustrated 48 pages. Send for your copy — free to executives, purchasing agents, shop superintendents, foremen, key mechanics.

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☐ Please send a free copy of *"File Filosophy."*
☐ Please send set of cartoons for Bulletin Board.

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NICHOLSON FILES

NICHOLSON U.S.A. MADE IN U.S.A.

FOR EVERY PURPOSE

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"Know-How" Information, Continued

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☐ **16. CUTER GRINDER** with exclusive index driving head and with flat bed attachment. Universal in application, low in price, highly flexible and durable. This tool is described in detail in 4-page bulletin. It is compact, easy to operate and of sturdy construction. Index dividing head gives it almost unlimited flexibility. Berco Manufacturing Co.

☐ **17. LIGHTING HANDBOOK**—New Government manual and price schedule for distribution to Government procurement agencies, purchasing personnel, etc., analyzes five main types of lighting, also describes "Superlite" conditioning bulb for use without fixtures etc., and infra-red heat lamps. Includes Net Price Schedule for the period ending Aug. 31, 1943. Birdseye Electric Corporation.

☐ **18. SAFETY-FIRST** — Widely diversified line of safety equipment—hundreds of products that take in every phase of the safety problem, including women's apparel, guards, lights, tongs, clothing, etc., are described in 144-page catalog. Book has 10-page index. Boyer-Campbell Company.

☐ **19. ANTI-RUST**—Bulletin describes anti-rust compounds said to be entirely different from usual corrosion inhibitors. There are two types, "to UNS EM-61c, Ord. AXS 673 for outdoor or indoor use," and another for indoor use. Former said to be unaffected by intense sunlight, salt water, and soaps, and to give 100% protection for ferrous and non-ferrous metals. Black Bear Co.

☐ **20. PUMP CHECK CHART**—for servicing rotary pumps, check-chart in card form for hanging on pipe or wall serves as reminder to maintenance men. Cards free in reasonable quantity. Say how many. Blackmer Pump Co.

☐ **21. LIQUID CONTROL**—Equipment for filtering and distilling, lubricating, lubricating, metering, pumping, refueling, storage and dispensing, and accessories, are fully described and illustrated in indexed 40 page catalog. S. F. Bowser & Co.

☐ **22. ELECTRICAL CONNECTOR** Guide—A handy method for making proper selection of electrical connectors. Six pages illustrate wide variety of connectors and indicate principal applications. It contains checkup form for making plant survey of connections. Burndy Engineering Co., Inc.

☐ **23 REDWOOD PIPE**—Sixteen pages of drawings and information of "know-how" information on the four types of Redwood pipe—stave, machine banded, bored, and redwood lined metal pipe. Can be laid on surface or buried. Not affected by electrolysis. Low Cost. Inside diameters from 4 inches up to 16 ft. California Redwood Association.

☐ **24. REDWOOD LUMBER**—Series of data sheets giving know-how information on redwood tanks and vats, pipe, roofs, gutters and drainpipe, sash & frames, fences, culverts, expansion joints. They are illustrated with tables, drawings and pictures. California Redwood Association.

☐ **25. GLUE CHART**—This chart shows glue recommendations for U. S. Government specifications on glues and their use on plywoods, plywood boxes, fiberboard boxes, propellers, skis, furniture, barges and a variety of things. It was prepared by the Technical Service Department, Casein Company of America.

☐ **26. JOINT-GLUING Trouble Shooter**—A non-technical handbook that aims to show how to keep the "bugs" out of the gluing procedure. Especially designed to help workers whose experience in gluing is limited. How many copies do you need? Casein Company of America.

☐ **27. CHEMICAL & CHEMICAL ENGINEERS**—Fifty-four-page Directory of Consulting Chemists and Chemical Engineers describes their qualifications and the kind of service they are prepared to render. Shows staff, laboratory facilities, and scope of activities and special experience. Directory is Free. Assn. of Consulting Chemists and Chemical Engineers, Inc.

☐ **28. METAL HOSE**—Basic types of flexible metal hose; specifications and recommendations for air, exhaust, water, oil, fuel, high pressure hose, and ventilating and voice tubing, coupling details, flange constructions, and "how to specify" are detailed in "Blueprint" to Flexible Metal Hose for Ships." Chicago Metal Hose Corp.

☐ **29. MILLING-BROACHING** — Also, Die Sinking, Grinding and Lapping. Fine catalog of 48 pages illustrates, describes and gives general specifications on these varied types of equipment. Its a good machine-tool buying guide. Cincinnati Milling & Grinding Machines, Inc.

☐ **30. ELECTRIC TOOLS**—Well illustrated 32-page catalog covers electric drills for various uses, drill stands for portables, sanders, polishers, portable hand grinders, die grinders, carbide tool grinders, grinder-buffers, quick-action heat gun and other equipment. Jas. Clark, Jr. Electric Co.

☐ **31. PLASTIPITCH SIDING & ROOFING**—Something new, described in six-page folder. Said to be highly fire resistant. Does not require felting or membranes. Also, claimed to be acid and alkaline resistant and impervious to all ranges of climates, and to "last a life-time." Coated Products Corp.

☐ **32. PLASTIC PARTS** done without molds to the closest tolerance specifications are described and illustrated in folder. Parts illustrated include gear knob, coil forms, internal-external threaded coupling, transparent locking device, commutator brush holder, treaded tube section, and others. Creative Plastics Corp.

☐ **33. ROLLER CHAINS AND SPROCKETS** for Aircraft—This 32-page book is termed a guide to correct and safe procedure for

(Continued on page 14)

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FOUR PAGES OF "KNOW HOW"—10-12-14-16

Aid on wartime tool steel problems

Top speed war production demands TOOLS — *more* tools than dreamed of in peace time — *new kinds* of tools for new war time jobs. The tool industry is tackling this tremendous task short of skilled tool makers and restricted by shortages in their choice of steels.

Solutions to these new problems are being worked out every day by the tool industry. Frankly, we don't have all the answers but our contacts with American tool makers determined to win this war puts us in a position to assist you in finding solutions to some of the particular problems that may be facing you.

On your problems of steel selection and treatment of tool steels, we would be very glad to have you get in touch with us. For your convenience, we are listing below the addresses of our district offices.

COPPERWELD STEEL COMPANY · WARREN, OHIO

COPPCO TOOL STEELS

BUFFALO	1127 Liberty Bank Building	Washington 7283
CHICAGO	122 S. Michigan Avenue	Harrison 1411
CLEVELAND	1158 Union Commerce Building	Cherry 1326
DETROIT	7-251 General Motors Building	Trinity 1-1760
NEW YORK	117 Liberty Street	Cortlandt 7-8314

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"Know-How" Information, Continued

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the selection, installation and maintenance of precision roller chains and sprockets for aircraft. Diamond Chain & Mfg. Co.

☐ **34. PNEUMATIC DIE CUSHION**—Installation instruction and service manual outlines principles, and describes bolster plate mounting and press bed mountings. Presents simple, detailed description as to construction, operation, care and use, together with limited number of representative installations for deep drawing operations, pressure pad control on forming dies, and stripper pad control on compound blanking and piercing dies. Dayton Rogers Manufacturing Co.

☐ **35. SPRAYING OPERATIONS** are portrayed in various industries by 8" pictures in 32-page booklet. Shows how the other fellow does the job. Pictures taken in various industries,—machinery, shipbuilding, munitions, aircraft, steel, and so on. The Eclipse Air Brush Co.

☐ **36. HARD SURFACING** of Worn Parts: Page bulletin described Durface, new surfacing alloy for rebuilding worn surfaces and parts at low temperatures, and for general purpose and salvaging metal parts. Has strong bonding action, and great hardness. Easy to apply. Eutectic Welding Alloys Co.

☐ **37. COOLANT PUMPS & VALVES**—This catalog is a comprehensive compilation of data on coolant pumps and valves with mechanical drawings of each model. The different sections include Valves, standard, flange, special; Pumps, motor driven; Pumps, direct drive, belt drive; and, Pumps, special. The Fulflo Specialties Co., Inc.

☐ **38. MOLDED PLASTICS PARTS** — 16-page booklet on "Designing Molded Plastics Parts" explains factors of inserts, tolerances, shrinkage, ribs, bosses and fillets, threads, holes, undercuts, etc., with facts on thermosetting and thermoplastic materials. General Electric Co.

☐ **39. NUTRITION GUIDE**—Master Nutrition Guide designed for use by industrial dietitians, home economists and others concerned with education on nutrition, is said to offer simple and instructive method for getting war workers to eat correct food. Course may be given in three or four-week periods, has been staged in factories, stores and army ordnance plants. Copies are free to instructors. Additional copies at cost. General Electric Co.

☐ **40. CRANES & HOISTS**—Maintenance and operation of electric cranes and hoists are described in detail in 104 page catalog. Crane nomenclature, types, details, different type hoists, hoisting ropes, electrical equipment etc., are outlined and illustrated. Shepard Niles Crane & Hoist Corp.

☐ **41. TAPS, SHARPENING**—Taps have tough jobs. "How to Sharpen Taps" is one of series of small, illustrated, easy-to-read folders on the use and care of taps. Say how many. Greenfield Tap & Die Corp.

☐ **42. CASTINGS**—Gray Iron and Meehanite—Hundreds of kinds and sizes are illustrated,—ornamental parts, hardware, guards, parts for appliances, machine tools, heaters and a wide variety of small sizes and odd shapes, in 32-page catalog. Hamilton Foundry & Machine Co.

☐ **43. LATHE CONVERSION** attachments for converting engine lathes into complete, accurate precision turret lathes in 15 seconds, are described in new catalog. "Operator has constantly available nine different tools." Adaptable to any size or make from small bench lathes up to 24" swing. Jefferson Machine Tool Co.

☐ **44. FUEL STAINERS**—Four-page bulletin illustrates various types of fuel strainers, and describes manufacture that makes for dependability. The C. O. Jelliff Mfg. Corp.

☐ **45. VALVES, DRAINS,** By-Passes — Where to Use Them. This 32-page booklet explains which valve to use—differences among types of valves—the fundamentals of valve designs and applications—where to use by-passes or drains, and lists A.S.M.E. Power Boiler Code Valves. Jenkins Bros.

☐ **46. METAL CUTTING BANDSAW**—"Will cut practically anything in your stock rack," according to 4-page bulletin. Coolant not needed. Excellent accuracy. Blade removes less than 1/16th inch of metal. Cutting pressure is controllable eliminating burring or gouging when cutting thin walled sections. Can be had with casters for portability. Johnson Manufacturing Co.

☐ **47. FIRE PROTECTION**—Fire and How to Fight It is subject of brochure of 36 pages, which tells how fire must be extinguished, and details various types of fire extinguishers, their construction and operation. Another booklet describes How to Make Fire Kill Itself. Walter Kidde & Co.

☐ **48. TOGGLE CLAMPS**—Toggle Clamps, Toggle Wrenches, Toggle Vises, and Pliers are illustrated by fine photographs and line drawings, with information on physical and operating characteristics, and price list on file with OPA, in handsome, plastic-binding catalog. Knu-Vise Inc.

☐ **49. ROLLER GRAVITY** Conveyors: Sixteen-page catalog shows variety of installations in packing, stock and shipping departments, for boxes, cases and other products, drag chains, chutes and ramps, switches, stops, etc. Contains table on conveyor selection. Lamson Corp.

☐ **50. GRINDING WHEEL USE**—This 64-page book contains a large amount of "know-how" for your cutting and grinding department. Tells about grinding wheel manufacture, and how to increase efficiency, interestingly dramatized for quick grapsing. Newcomers and oldtimers benefit by the rules and special data. Macklin Co.

☐ **51. V-BELTING:**—New catalog on Veelos Adjustable V-Belting, the link V-belt which is sold in rolls is also an instruction manual which shows how to take belt apart with screw-driver and how to couple it together without tools. Typical applications are illustrated, along with engineering data. Manheim Mfg. & Belting Co.

(Continued on page 16)

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AT FOOD MACHINERY CORP.

SKILSAW TOOLS

RUSH AMPHIBIAN TANKS TO ACTION!

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EVERY MAN COUNTS FOR MORE USING SKILSAW TOOLS!

Alligator Tanks they call 'em . . . and they're wanted *quick* for rough, tough action on America's fighting fronts. That's why Food Machinery Corp. depends on SKILSAW TOOLS to speed production. Like the tanks they're building, SKILSAW TOOLS are *fast, rugged, dependable* . . . they're action-tested front-line fighters in the Battle of Production!

You'll find these SKILSAW TOOLS *preferred* in war plants everywhere because they're lighter, more compact for easier handling . . . more powerful for greater output per man on countless jobs. Ask your distributor to demonstrate SKILSAW TOOLS on your own work *today:* See how greatly these better tools will increase *your* production!

SKILSAW, INC., 4761 Winnemac Ave., Chicago
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¼ IN. SKILDRILL—Handles like pointing a finger . . . gets in anywhere a fist will. Powered for top-speed, day-long drilling on production lines.

½ IN. SKILDRILL—Light, compact, powerful for faster, better drilling, boring and reaming in wood, steel, compositions.

SKILSAW SANDER-GRINDER—Speeds all grinding, filing, metal-cleaning, sanding, buffing and polishing on all materials.

SKILSAW PORTABLE ELECTRIC TOOLS

★ MAKE AMERICA'S HANDS MORE PRODUCTIVE ★

"Know-How" Information, Continued

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☐ **52. NITRIDING** — The Homo Nitriding Method for heat-treated production is described in 19-page publication. Where process is correctly applied, rejects are said to be practically unknown. Homo Nitriding Method is also said to give precise control to nitride parts to exact specifications. Leeds & Northrup Co.

☐ **53. SPROCKET WHEELS** — Cast tooth sprocket wheels available from stocks are listed in 8-page catalog, illustrated. Includes sprockets for Ewart detachable "H" Class, SM, SS, XS, GL: "C" Class and "800" Class chains. Prices, dimensions and weights are given. Link-Belt Co.

☐ **54. ROLLING MACHINE** — Bulletin illustrates three-score styles made on this machine which is adaptable for numerous shapes—casing rings, Pittsburgh locks, S Cleats and others. Machine is self-adjusting to gauges—24 to 18 without change of setting. Maplewood Machinery Co.

☐ **55. PLATE LIFTERS**—Positive Plate lifting clamps that will lift anything from thin sheets to armor plates, are described in small circular. Capacities are rated from ½ ton to 100 tons. Merrill Brothers.

☐ **56. CLEAN WELDS**—Circular describes No-Spat, new liquid coating said to prevent adhesion of weld spatter. After welding, spatter is wiped off—no chipping or grinding. Featured by absence of obnoxious fumes. Minimizes rod spatter, saving metal. Midland Paint & Varnish Co.

☐ **57. DAMPNESS CONDENSATION** — Here's a handbook that gets to the bottom of the condensation drip problem. Shows how to prevent and cure damaging condensation and sweating on pipes, fixtures, walls, ceilings. J. W. Mortell Company.

☐ **58. TOOL MANUAL** — Vest-pocket, 52 page manual contains information on care, handling and efficiency methods of using tools. Drawings illustrate applications, operations, styles and instructions for grinding, design, and brazing blanks to used shanks. Free. McKenna Metals Co.

☐ **59. METAL CLEANING**—Prep Products for providing a firm and lasting bond between all kinds of metal surfaces and paint finishes, are described in bulletin. Metalprep is cleaner and rust remover. Preprite is a rust preventive. Galvaprep is for use on galvanized iron, zinc die castings and other zinc alloys. Prepwash is for removing oil and grease. Neilson Chemical Co.

☐ **60. RUBBER PARTS, LONGER LIFE** — Twenty-page illustrated booklet tells how to get longer use from hot water and steam hose, conveyor belts, fire hose, transmission belts, and offers free supply of conservation tags. Pioneer Rubber Mills.

☐ **61. BELT DRIVES**—New handbook features up-to-date information on engineering and maintenance of group drives, and tells how to convert individual drives to group drives, explains grouping of machines, engineering of drive components, and correct care of belts. Cling-Surface Co.

☐ **62. PRECISION LATHES** — Eight-page catalog illustrates and describes 10" toolroom lathes and 10" quick change gear lathes in foor-leg and metal bench models. Attachments, accessories and tools also listed. South Bend Lathe Works.

☐ **63. FLUORESCENT MAINTENANCE** — How to care for fluorescent installations and get maximum lighting service therefrom, is subject of pocket-size booklet. Explains how to keep fluorescent installations operating at peak efficiency, Sylvania Electric Products, Inc.

☐ **64. MILLING MACHINES**—New precision milling machines, hand feed and power feed, and attachments; and conversion attachments for lathes, endless belt sanding machine, and swing-frame grinding and polishing machine are covered in 8-page catalog. Jefferson Machine Tool Co.

☐ **65. SOAKER-CLEANER** especially designed for small war production parts (shells, cartridges, etc.) is illustrated and described in one page. Unit is named "Soaker Hydro" and is for soaking, washing, drying and preparing machined, finished or rough parts and for complete metal assemblies. It is said to be simple, compact and fully automatic. Sturdy-Bilt Equipment Co.

☐ **66. PAINT PRODUCTS**—A.I.A. File envelope contains 18 folders and color cards on industrial paints, machine enamel, and various interior and exterior paints for a wide variety of uses. U. S. Gutta Percha Paint Co.

☐ **67. BALL-BEARING.** Single-phase, repulsion-induction motors are described in bulletin. This single phase motor is said to be noted for its high starting torque and low starting current; maximum temperature rise 40 deg. C. Ball-bearings are claimed to affect 75% reduction of friction loss, and 85% reduction in lubrication costs. Motors are interchangeable on 110 or 220 volts. Valley Electric Corp.

☐ **68. THERMOCOUPLES** — Valuable information for buyers and users of thermocouples is contained in new thermocouple data book and catalog. It is more than a catalog of prices and specifications, for it contains operating and use information that makes it a valuable reference book. Wheelco Instruments Co., Chicago, Ill.

☐ **69. ELECTRIC CONTROL Equipment** — Up-to-date 8-page bulletin illustrates and describes automatic control equipment—magnetic contactors, reversing controls, automatic reset timers, process timers, program clocks, remote control switches, automatic transfer switches, etc. It details construction, applications and prices. Zenith Electric Co.

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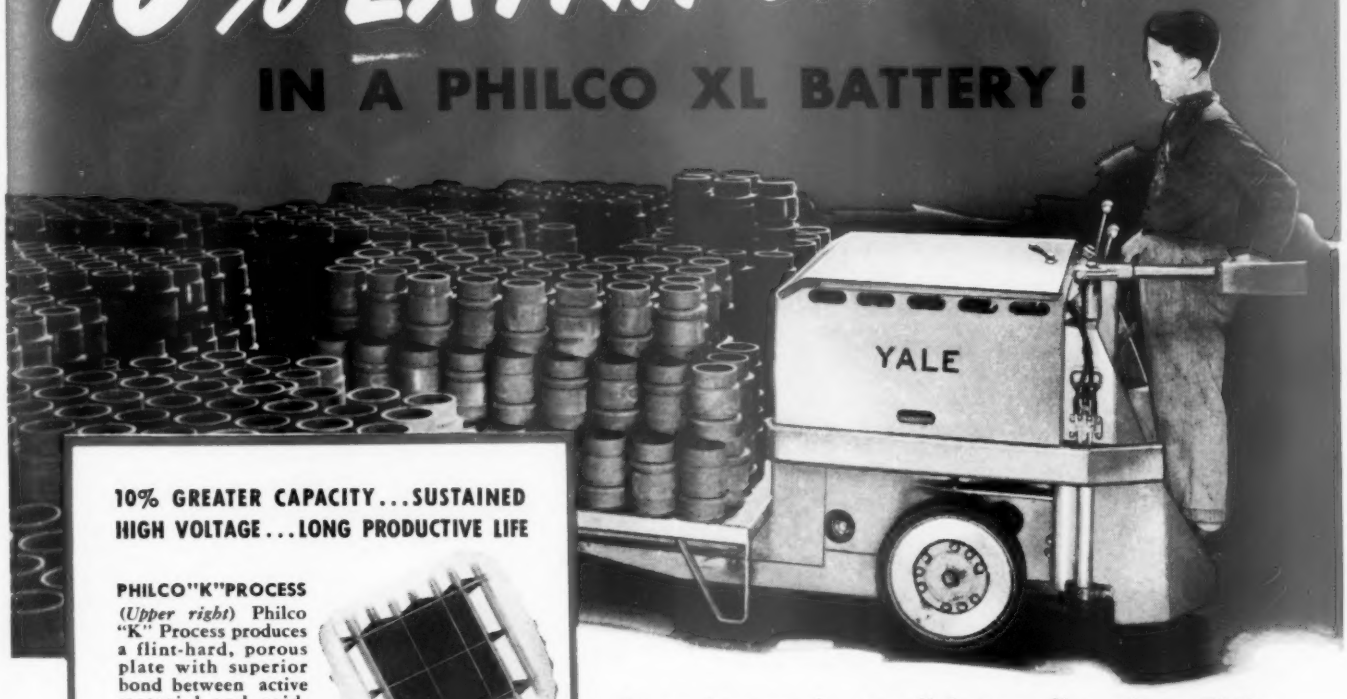
FOUR PAGES OF "KNOW HOW"—10-12-14-16

PLATE FOR PLATE, YOU GET

10% EXTRA CAPACITY

IN A PHILCO XL BATTERY!

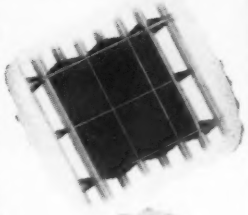


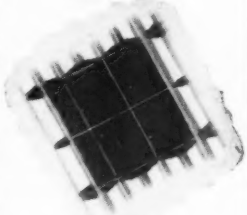
10% GREATER CAPACITY...SUSTAINED HIGH VOLTAGE...LONG PRODUCTIVE LIFE

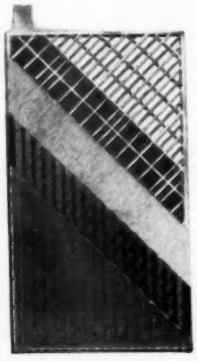
PHILCO "K" PROCESS

(*Upper right*) Philco "K" Process produces a flint-hard, porous plate with superior bond between active material and grid.

(*Lower right*) Ordinary plate drying. Active material contracts unevenly and away from grid, cracking on surface, and leaving center impervious to liquid.







PHILCO TRIPLE INSULATION

(*Left*) Philco Triple Insulation adds months of service by sealing active material into grid with Glass Fibre Mats, Slotted Rubber Retainers, rugged Philco Separators.

At no increase in overall battery dimensions, Philco Heavy Duty XL Batteries give you 10% greater capacity! You get this vital reserve of power because Philco XL plates are longer, provide more active area . . . because Philco's exclusive "K" Process produces a flint-hard, exceptionally porous plate with superior bond between active material and grid . . . because Philco Triple Insulation assures maximum retention of active material! Now, more than ever before, you need this extra capacity in your electrical industrial trucks. Find out how Philco XL Batteries will speed up your material handling. Use the coupon to receive the concise Philco Industrial Truck Battery catalog.

PHILCO CORPORATION
STORAGE BATTERY DIVISION
TRENTON, N. J.

REPLACE WITH RUGGED, HIGH CAPACITY

PHILCO INDUSTRIAL TRUCK BATTERIES

FREE! **NEW CATALOG ON PHILCO INDUSTRIAL TRUCK BATTERIES**

PHILCO CORPORATION, Storage Battery Division, Trenton, N.J.

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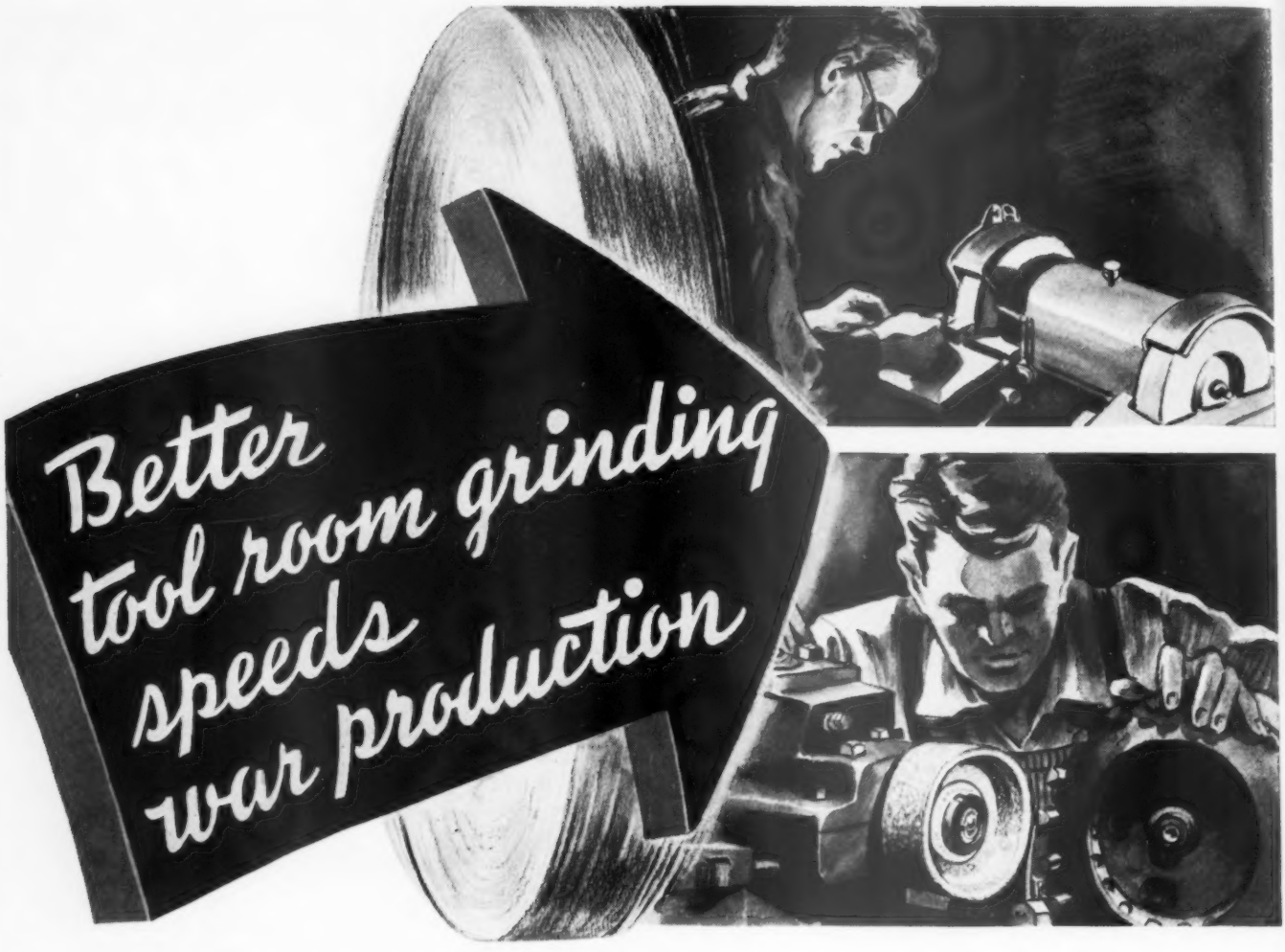

Follow these suggestions for better grinding results in your tool room. Your cutting tools are vital production tools for war production. By keeping them at peak efficiency you are speeding production of the materials of war!

1. ***Sharpen tools and cutters frequently*** . . . before the cutting edges become too dull . . . otherwise you waste time and metal in renewing an overly dull edge.
2. ***Use fine grain abrasive wheels*** . . . for finish grinding the cutting edges of milling cutters, hobs, reamers, broaches, lathe and planer tools, etc. . . . to obtain keener edges that last longer.
3. ***Do not quench a hot tool edge in water*** during offhand tool grinding. You will check and crack the cutting edge.
4. ***Frequent dressing and truing of the wheel face*** permits best precision grinding. However, excessive dressing wastes the abrasive wheel.
5. ***Use open-density wheels*** for grinding the newer, tough alloy steels after heat treating. The open-density wheels have a wider grain spacing which provides chip clearance for the abrasive cutting particles.
6. ***Use the proper grain and grade of abrasive wheel*** for your work. ABRASIVE COMPANY "white" and "red" Tool Room Grinding Wheels have been standard for many years for all types of tool and cutter grinding. Use the one *best suited* to your job.

ABRASIVE COMPANY

Standard Specifications

Tool Room Grinding Wheels

Broaches	W60- J- KY
Cutters	W46- K- HY
Die Blocks	W46-G- KY
Drills—Small	60-M- DY
Drills—Large	36-M- DY
Gears	W60- J- K8
Hobs	W60- J- K9
Machine Shops	
General Offhand	46-M- DY
Reamers	W46- J- HY
Stellite Cutters	W46- J- HY
Tools	
Lathe and Planer	
Light Offhand	46-M- DY
Heavy Offhand	46- N- D9
Heavy—Large Wheels	30-O- D9
Fixture Grinding	W46- J- HY
Tungsten Carbide Tools	
Roughing—Offhand	G601- I- V9
Semi-Finishing—Offhand	G80 -H- V8
Finishing Offhand	G120-H- V8

Write for copy of our Grinding Wheel Data Book.

ABRASIVE

ABRASIVE COMPANY

DIVISION OF SIMONDS SAW AND STEEL CO.

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". . . and every day we chart some new discovery"

"Each day we gather, some 700 all told, at the Hercules Experiment Station to explore the Unknown Sections of Hercules Land. Instead of maps, we use formulae; instead of ships, test tubes; instead of landing parties, pilot plants. Every day we chart some new discovery, some new idea rich in opportunity to improve a product, to speed up manufacture, to substitute for an exhausted strategic material . . .

for instance . . ."

Rosin now polymerized for added advantages

In the last year and a half, additional important things have been happening in rosin modification, making this material more useful than ever. For example, Hercules Poly-pale* Resin retains all of rosin's good qualities, but gives a higher melting point, wider solubility, greater viscosity in solution, a lower rate of oxygen absorption, and does not crystallize in solution. Poly-pale Resin extends critical materials—glycerine, phenolaldehyde, maleic anhydride—in production of resins. Write for information.

Meet the new family of alkyd resins

From Petrex* comes a new family of alkyd resins—the Petrex Elastomers. They have important properties of elasticity, flexibility, and tackiness, which indicate their utility in many industries.

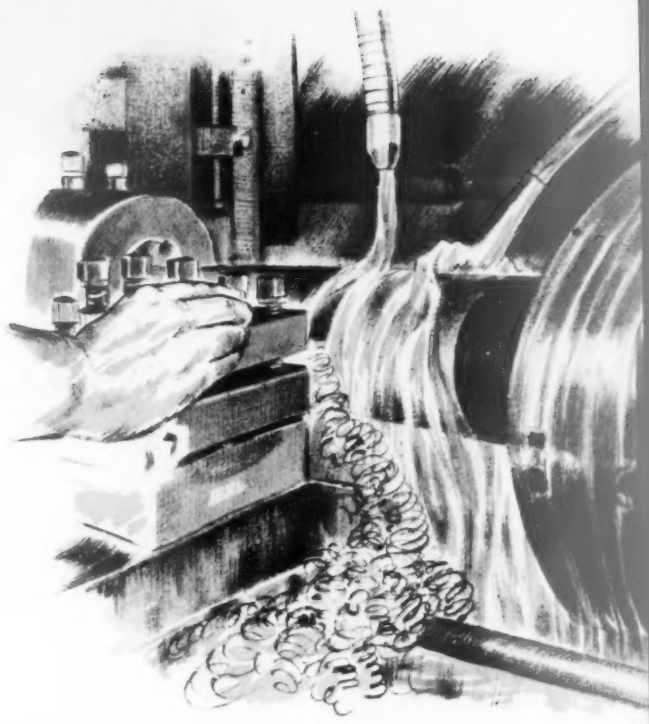
Uses have already been developed for these elastomers in adhesives, paper impregnation, coated and laminated textiles, waterproof tape backing, "rubber" cements, to mention only a few. Resins may be applied as hot-melts, from solvent solutions, or in emulsion form. You should know more about this interesting new family of elastomeric resins, both for its present use and for its future importance. Write Hercules for further information.

Low-cost flame-resisting plasticizer

Hundreds of tons of Hercules Chlorinated Paraffin are being used each month as a low-cost, flame-resisting plasticizer. As produced by the Hercules chlorinating process, it is a high-quality product, exceptionally stable for this class of material, and available in bulk quantity. Further information on request.

*Reg. U. S. Pat. Off., by Hercules Powder Company

Dresinates—a new group of soluble resinates



Dresinate* is the Hercules name for an interesting new group of water-soluble resinates with excellent wetting, emulsifying, and detergent-assisting properties.

Dresinates are inexpensive, have exceptional qualifications for use in alkaline cleaning compounds, metal-degreasing products, disinfectants, and similar industrial chemical specialties. One interesting recent discovery is the added stability given to petroleum-sulfonate cutting oil emulsions when hard water is encountered. Further information on this interesting new group of resinates may be obtained by writing to Hercules.

Refresher points on nitrocellulose plastics

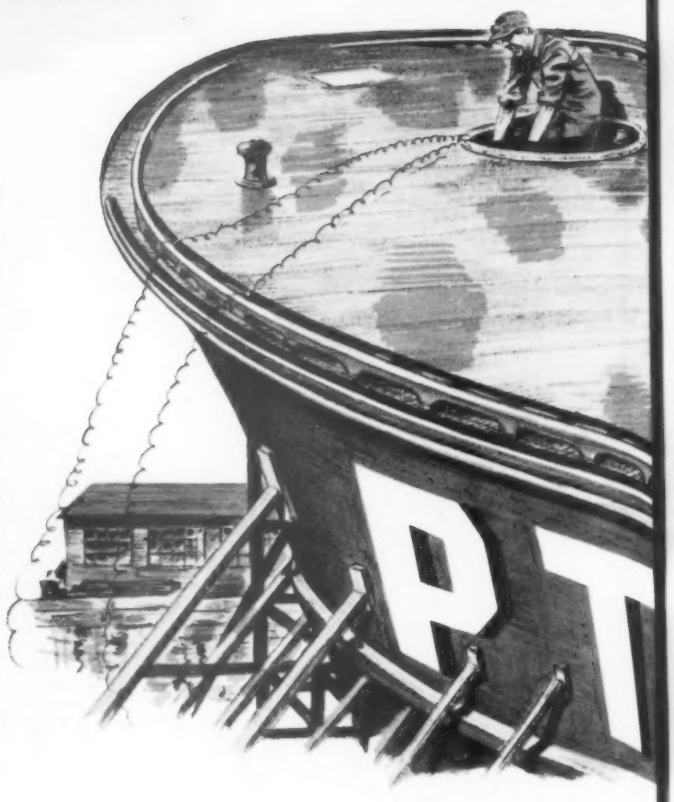
In the wide interest in new plastics it is easy to overlook the advantages of the older plastics—nitrocellulose, for example. Just recently, this tried-and-proven product licked a tough job—providing a water-resistant, acid-resistant, transparent, lightweight battery container for portable searchlights. Powered by this 8-volt storage battery, the light throws a 75,000 candlepower beam that must not fail—on sea duty or at vital war plants.

The choice of nitrocellulose plastic was further justified because this time-tested material provided the added advantage of long life under severe service conditions at sea, and the extra strength and toughness required, at low cost.

Hercules does not manufacture finished plastics or lacquers—only the nitrocellulose base. Our experience is therefore available impartially to producers of all plastic materials.

*Reg. U. S. Pat. Off., by Hercules Powder Company

A better varnish-resin with a promising future



The close cooperation of the varnish industry has enabled Hercules to accelerate the development of a new resin—Pentalyn* M. Used with the oils available today, this resin produces varnishes that develop adequate salt-water resistance, fast dry, toughness, and other properties important in today's finishes.

Continuing research and cooperation with the industry are rapidly demonstrating that the Pentalyn resins are a sound basic development. Under today's conditions, Pentalyn M is outstanding. When varnish makers are again free to choose the oils they prefer in their formulations, the Pentalyns will produce totally new and better finishes. If you would like further information on Pentalyn M or the Pentalyn series of resins, please write Synthetics Department, Hercules Powder Company, Wilmington, Delaware.

Cleaning dirty fibers quickly

It's the correct balance between terpene alcohols and terpene hydrocarbons that gives Yarmor* 302-W its ability to penetrate, wet, and emulsify grease and oily or resinous dirt in textiles. Yarmor 302-W contains 70% terpene alcohols. That's why it goes to work quickly, thoroughly, in cotton and wool cleaning operations. The supply situation on Yarmor 302-W is good at the moment, and orders can be filled promptly.

*Reg. U. S. Pat. Off., by Hercules Powder Company

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NEW GOVERNMENT "SPECS" for ALLOY STEELS

Revised Frasse Data Chart Now Available

Incorporating all recent corrections and additions, this new Frasse Data Chart enables you to identify latest Government "specs" for alloy steels at a glance.

It shows the chemical analysis requirements for each Army, Navy, and Federal specification, together with its nearest commercial equivalent in SAE, AISI, and AMS numbers. Government "specs" for the new NE steels are included.

The chart is handy file size, printed on tough stock, and suitable for wall or desk use. If you're working to Government "specs", you'll find it invaluable. Just send in the coupon—a copy will be sent to you by return mail.

Frasse

Mechanical and Aircraft STEELS

Peter A. Frasse & Co., Inc. 1
Grand Street at Sixth Ave., New York, N. Y.

Please send me a copy of your latest Frasse Data Chart, Section D, No. 1, showing Government "specs" for alloy steels and corresponding commercial designations.

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STAINLESS STEELS AND TUBING · COLD ROLLED STRIP AND SHEETS · WELDED STEEL TUBING · DRILL ROD

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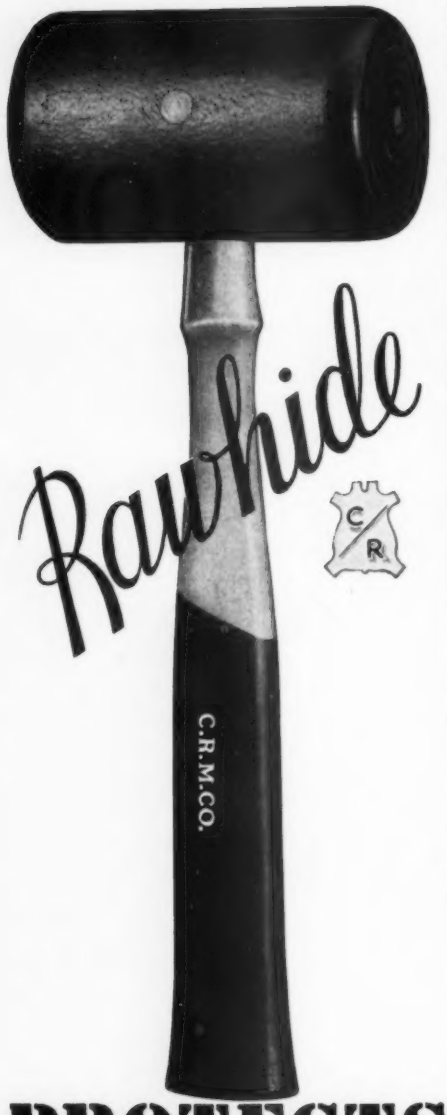

PROTECTS

C/R mallets and hammers permit forceful, effective blows without battering, scarring or marring. They protect fine finishes, delicate insulation, hardened parts and costly machinery. They far outlast other mallets, hold a true striking face and, because they absorb recoil, they are less fatiguing on continuous use operations (as pounding in winding, assembly work, etc.). Speed production—reduce spoilage. All sizes. Weighted or unweighted. Hammers take replaceable insert faces.

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CHICAGO Rawhide MFG. CO.
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F.O.B. Philosophy of Buying

TO those who are interested in the vocabulary of purchasing, the description of that part of the function which consists of getting delivery after the order has once been issued offers an interesting study. Up in the New England district you still hear it referred to as "urging" or "hurrying" of orders, which is certainly a simple and straightforward expression of purpose. Then there is the common term of "follow-up," which emphasizes the responsibility of the purchasing department in carrying through the complete job of getting materials to the job. Most popular term is the technical-sounding word "expediting" which has two distinct advantages in that it implies helpful cooperation with the supplier in securing prompt delivery and provides a dignified title for the fellow who does the job. He is an "expediter," which seems to be a step ahead of "follow-upper," "urger," or "hurrier." But, as pointed out in a recent article in these pages, the term has its disadvantages as well. Salesmen who have been called into purchasing departments to help with this job, tell us that sales departments don't like to be expedited and are inclined to resent the fellow with this title. Therefore, at the Aluminum Company, for example, the term is taboo, and the erstwhile expediters are now "coordinators." That, of course, is thoroughly in tune with the times, and it stresses the new concept of expediting as a phase of scheduling in which both the buyer and the seller share the responsibility. Latest contribution to our list of terms comes from a large Ohio company, referring to the "materials gathering" staff of the purchasing department, which certainly has a highly descriptive value. We have no data on the relative effectiveness of these various terms. The important thing is still to get the goods.

• •

FOR some years we have seen from our office window the boldly painted slogan high up on the headquarters building of one of New York's big savings institutions, but it assumed new poignancy as March 15th came around. The sign reminds all readers that:

"A part of what you earn belongs to you."

• •

MR. Stettinius has taken considerable pains over the past few months to point out that Lend-Lease is not a one-way arrangement, and that we have been on the receiving end of a substantial flow of materials from our allies as well as sending the products of our factories abroad. Comparative figures on the balance of trade are not available, but apparently it has not progressed to the point of justifying a change in title to the Borrow-Rent program.

• •

WAR Production Board officials are insistent on the fact that "the Controlled Materials Plan is here to stay." In the same breath, they frankly admit that the plan today bears little resemblance to the plan that was unveiled in November, and that further changes are quite likely to be made as we go along. The policy seems to be that in place of constantly changing the initials, as in the past, we'll stick to the same letters and change the things for which they stand—which is a new and interesting technique of administration. Can it be that, at long last, the alphabetical permutations and combinations have been exhausted?

• •

SOME of the P. A. Associations at their recent meetings have called for a show of hands on such questions as: How many are now operating under C.M.P.? How many believe that C.M.P. will be more effective in regulating the flow of materials than previous controls? How many thoroughly understand C.M.P.? What constructive suggestions may be made for improvement? Etc. The results of this impromptu catechism are decidedly interesting. It is hoped that the

study will be followed through on a comprehensive basis, and that the results will be made available to the planners and administrators in Washington. For after all, the success or the shortcomings of the plan will appear in the purchasing departments of the nation, where all of these programs must be worked out in practical terms.

• •

ONE of the things in which F.O.B. takes pride is this: We have never referred to our editorial offices as a "shop."

• •

PRENTISS Brown, new administrator of prices and rationing, has made a start toward evaluating our national organization for handling this job by comparing the staff requirements with those in Great Britain, where a similar program has been in effect for a considerable period of time. On overall personnel, the Britons maintain a payroll of some 21,000 workers, with which our payroll of 47,000 compares not unfavorably, considering the relative size of population and the extent of territory to be administered. But there are some rather startling differences in the make-up of this staff. For when Mr. Brown asked the British representative how many lawyers were included, the latter began to count on his fingers and reported an even 10, as compared to our own imposing array of legal talent in OPA, 2,700 strong. Commenting on this point in a recent appearance before a Congressional committee, Mr. Brown was inclined to the opinion that some readjustment is in order but was cagey in regard to making any promises as to how far it might go. The essential number of lawyers, he declares, is somewhere between 10 an 2,700. At least, this puts a ceiling on the lawyers.

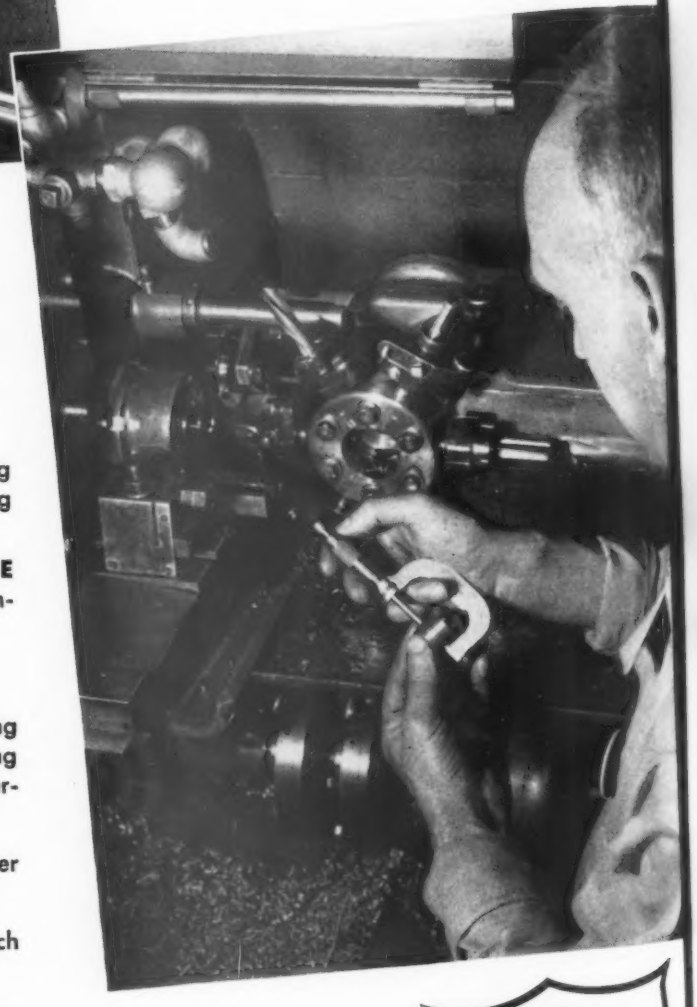
• •

INCIDENTALLY, it is still the prudent thing to do to read OPA regulations with due regard to their precise legal phraseology, and not to read into them any horseback interpretations of our own. For example, the restrictions on civilian shoes have been popularly interpreted in terms of three pairs per year. But we are warned by the hide and leather section that there's nothing of the sort in the order. It calls for one pair in a four-month period. Period. What the additional allowance will be, if any, come June, is neither expressed nor implied.

A STEP AHEAD OF THE TIMES
HOLTITE
RECESSED HEAD SCREWS
A step ahead of industry's demands since 1904 by anticipating engineering developments, Continental Screw Company was completely equipped with men, methods and machines to fully meet defense requirements, and later the sudden heavy war production load.
Working for many years on a three-shift schedule our skilled operatives, augmented by trained helpers, take the present emergency demands in their usual stride. Equipped with the latest precision machines, and directed by experienced Engineering and Laboratory Staffs, our full roster of workers daily produce huge quantities of HOLTITE fastenings . . . the most precise, rugged and enduring assembly units science and human skill can devise.
CUT YOUR FASTENING TIME 50%
You can specify HOLTITE fastenings completely confident that they will provide service — a step ahead of the times!
CONTINENTAL SCREW CO.
New Bedford, Mass., U.S.A.
BUY MORE WAR BONDS

MAKE THEM LAST-

Micrometers cannot be replaced easily today — don't let yours be damaged — handle it with unusual care



The following suggestions will help save many a micrometer — make others last longer and serve better:

DO NOT measure revolving work.

DO NOT JAM the work against the anvil by forcibly turning the spindle. This may spring the frame or force the measuring surfaces out of line.

Unless micrometers have special measuring surfaces, **USE EXTREME CARE** in measuring over cutting edges, such as reamers and drills.

DON'T OPEN a micrometer by twirling it.

DO NOT LOCK the Micrometer Caliper at a particular setting and use it for long periods as a caliper gage. The measuring surfaces are too small in area to permit such use for a considerable length of time without excessive wear.

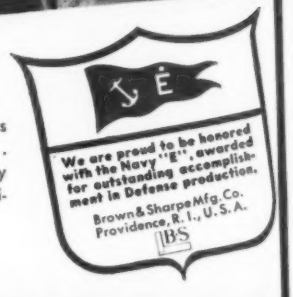
In the grinding room, **AVOID EXPOSING** your Micrometer Caliper to a flood of coolant containing grit or emery.

DO NOT CARRY your Micrometer Caliper in a pocket in which there may be dirt or grit. Keep it in its box when not in use.

KEEP the measuring surfaces apart when putting the tool away. If left together, moisture on them can cause rusting.

FOLLOW lubricating and adjusting instructions issued by the manufacturer.

The care of Micrometer Calipers is essential to the united war effort . . . be careful of yours. This is one way you can help America reach its maximum output.


E
We are proud to be honored with the Navy "E", awarded for outstanding accomplishment in Defense production.
Brown & Sharpe Mfg. Co.
Providence, R. I., U. S. A.
BS

Reproductions of this advertisement for use on your bulletin board furnished on request.

BROWN & SHARPE TOOLS

I'll Guard the home front

—against the forces of GENERAL WEAR

"HARCOTE" is ready! Ready to protect softer steels against the ravages of wear — to help you keep machinery on the job — now — when replacement parts are so difficult to obtain.

P&H "Harcote" is a hard surfacing electrode — both *hard* and *tough!* It's ideal for refacing parts subject to severe wear and abrasion, such as shovel teeth, scraper blades, farm implements, sand and rock handling equipment, and many other applications on carbon steel, low alloy and high manganese surfaces. "Harcote" is just one of the family of P&H Alloy Electrodes which answer every welding need. P&H representatives will gladly assist you. Or write us for literature and procedures.

Ask also for information about P&H Arc Welding Machines.

P&H Alloy ELECTRODES

ARMY E NAVY

A new star has been added to P&H's award for excellence in war production.

General Offices: 4577 W. National Avenue, Milwaukee, Wisconsin

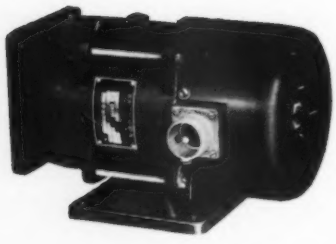
HARNISCHFEGER CORPORATION

WELDING ELECTRODES • MOTORS • HOISTS P&H ELECTRIC CRANES • ARC WELDERS • EXCAVATORS

Canadian Distribution: The Canadian Fairbanks, Morse Co., Ltd.

When writing Harnischfeger Corporation please mention Purchasing

PEACE
The ingenuity and craftsmanship which supplied the electric motor needs of other years is now all-out to win the war.
WAR
A MISSION TO FRANCE
With Presents for the Axis
PAGES FROM AVIATION'S HISTORY
Parallel Performance
CARRIER PERFORMANCE-PROVED "WEATHERMAKERS"
EMERSON PERFORMANCE-PROVED MOTORS
ACCURATE
Parallel Performance



No! You Have Never Used An Electric Motor Like This

This is one of many designs developed by Emerson-Electric for United Nations Aircraft.

Down through the years Emerson-Electric motors have been selected to furnish the motive power for many of the finest products of nationally known manufacturers.

Today . . . a line of entirely new and specially designed Emerson-Electric Motors is paralleling the brilliant performance of United Nations Aircraft.

"After Victory". . . the experience gained in war production will be added to Emerson-Electric's 53 years of accomplishment and devoted to meeting the new-day demands of electrical appliances and equipment.

THE EMERSON ELECTRIC MFG. CO. • ST. LOUIS

Branches: New York • Detroit • Chicago • Los Angeles • Davenport

EMERSON ELECTRIC

MOTORS • FANS • APPLIANCES • A. C. ARC WELDERS

When writing The Emerson Electric Mfg. Co. please mention Purchasing

HAVE YOU READ ABOUT 'EM?

made by the makers of Johnson's famous **WAX-FORTIFIED** *Paints*

For economical wartime maintenance in:

● *Mills* ● *Foundries* ● *Machine Shops* ● *Warehouses* ● *Offices*
● *Factories* ● *Power Plants* ● *Machinery* ● *Shipyards* ● *Hospitals*

We took the best materials available. We blended them with the same precision and skill which go into all Johnson Products.
And now this new War-Formula Paint is ready . . . ready to help reduce paint maintenance problems and costs to a minimum! In it are retained as many as possible of the advantages of Johnson's Wax-Fortified Paints.

Send for the facts about Johnson's War-Formula Paints and Enamels . . . finishes which provide from 400 to 600 sq. ft. coverage per gallon, finishes whose drying time is uniform, finishes you can brush or spray on, quickly and easily. Mail the coupon today.

S. C. JOHNSON & SON, INC.
Industrial Maintenance Division, Dept. P-43, Racine, Wisconsin

TO YOU OUR THANKS . . . AND A PROMISE

To so many of you, we owe our thanks for the reception you have given Johnson's Wax-Fortified Paints and Enamels in the last few years. Their rise in popularity has been remarkable by any standard.
Because some of the products used in Johnson's Wax-Fortified Paints are vitally needed by our government now, we have discontinued the line until after the war, rather than use substitute materials.
But this we promise. When we are able to produce Johnson's Wax-Fortified Paints again, they will be even better than before.

S. C. JOHNSON & SON, INC., Dept. P-43
Industrial Maintenance Division, Racine, Wisconsin
Please send me a copy of your illustrated booklet, "Johnson's War-Formula Paints," giving complete information on and specifications for the use of Johnson's new War-Formula Paints and Enamels.

"Xtra! Xtra! Read all about it! Send coupon for your copy today!"

Name _____
Position _____
Firm _____
Address _____
City _____ *State* _____

Buy United States War Savings Bonds and Stamps

Enlarged reproductions free on request

Friendly Gremlins . . . Our Specialty

Whatever kind of springs you use, you know how all-fired important it is for them to be dependable.

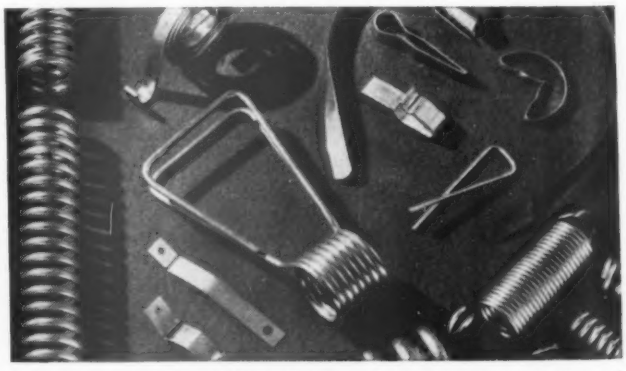
Here at Spring Headquarters we custom-make every conceivable kind of spring, and they're all friendly springs.

You see, after 122 years of precision manufacturing of specialty steel products, craftsmanship becomes a tradition. Our thousands of skilled experts know just the kinds of steel springs like to be made of. They know, too, just how to form and temper them so that friendliness becomes an inbuilt characteristic.

So as to make sure of all of this we produce the formulas of steel in our own blast furnaces. Then each succeeding step—the drawing, forming, tempering—is taken in our own mills.

Does that kind of beginning-to-end care make a reputation? We'll say it does. Every once in a while we get a specification "made of similar steel, and temper, to Wickwire Spencer."

Write for our free book "Springs and Wire Forms" containing formulae and tables of value to engineers. And for quotations, send specifications and priority rating. Wickwire Spencer Steel Company, 500 Fifth Avenue, New York, N. Y.



Here are just a few of the infinite variety of springs and formed wire shapes we produce. (In the illustration at top of page the famous artist Boris Artzybasheff pictures three springs famous among automotive men, Wickwire's friendly starter, valve and clutch springs.)

SEND YOUR SPRING QUESTIONS TO

WICKWIRE SPENCER STEEL COMPANY

STANDS FOR FRIENDLINESS

COPYRIGHT 1943 WICKWIRE SPENCER STEEL COMPANY

When writing Wickwire Spencer Steel Company please mention Purchasing

CARBON DIOXIDE fills the need for quickly available STORED ENERGY

Here's power that can be packed in a handy cylinder, carried anywhere, released at the turn of a valve—in a quick burst or over a long period.

Carbon dioxide is the most compressible of the industrial gases. Stored under 850 pounds pressure at 70° F., there are 30,000 foot-pounds in each pound of carbon dioxide. That's *three times* the energy of the other usual gases!

Walter Kidde & Company has found many interesting uses for this "powerhouse in a package." New applications are being worked out constantly. Perhaps carbon dioxide is the solution to *your* power actuation problem. Our Research and Development Department will be glad to discuss the matter with you.

Walter Kidde & Company
Incorporated

454 West Street, Bloomfield, N. J.

PROTECTS LIVES
Kidde
HIGH PRESSURE GASES · FIRE PROTECTION

When writing Walter Kidde & Company please mention Purchasing

VALVES AND THEIR RELATION TO BOTTLENECKS

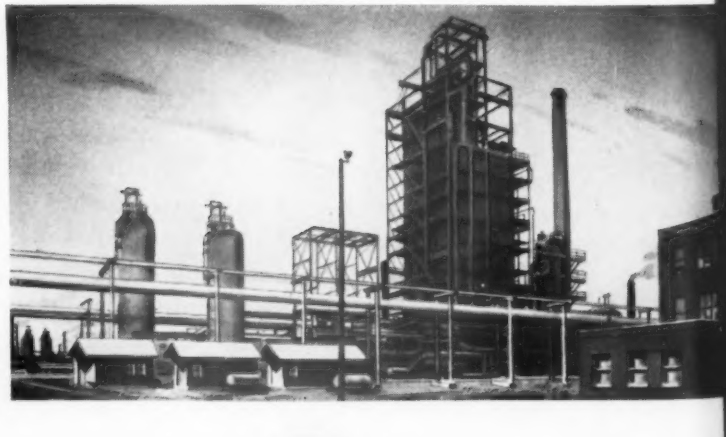
IF you step onto the loading platform at Crane Co. any hour of the day—any hour of the night either—you will see valves in crates and valves on skids on their way to break bottlenecks.

You have heard the often repeated statement that the scarcity of valves is holding up today's war production. It is true that valves are so vital to a nation at war that no battleship, destroyer or aircraft carrier could move without them. It's true that our expanding merchant marine needs valves in ever-increasing quantities. It's true that oil could not flow or gasoline could not be produced without valves. It is also true that valves play an important part in the production of steel and copper and aluminum and magnesium—in fact, in every raw product of war. No wonder valves are so much in the news—no wonder the need for valves and more valves is a basic demand for every activity in fighting a modern war.

Producing valves to control flow, whether it's for the Army or the Navy or for industry, is all part of Crane's job. That Crane, the largest maker of valves, has been able to double and redouble production as the Navy, Army and industry call for more and more piping, is a tribute to the complete control that integrates this company.

For Crane control extends from the selection and testing of raw materials—through the Engineering Department, alive to new demands and new uses—through every step of manufacturing—and finally to the complete distribution system, which includes 130 branches and over 500 wholesalers serving every corner of this country and covering foreign lands as well.

Crane Co., 836 S. Michigan Avenue, Chicago, Illinois



It doesn't look like a rubber tree, but this unit and many more like it are America's solution to the rubber shortage. These catalytic cracking units are an impressive tribute to flow control. For, whether the end product be butadiene or high octane gasoline, every step of the way it is under the control of valves. Furnishing valves for these units and for the pipe line and oil fields back of them is only one job of flow control that is keeping the 15,000 workers of the Crane plant busy on a 24-hour per day—7-day-a-week schedule.

ARMY E NAVY

CRANE *FLOW CONTROL*

THROUGH CRANE VALVES

● Too bad for you, Tojo. You thought it couldn't be done. You guessed wrong. You forgot to reckon with the speed and adaptability of American industry to pitch in and supply our fighting men with equipment far superior to that of yours.

Here at The National Bronze & Aluminum Foundry Co., just one of the many thousand companies, producing for United Nations' Victory, special care is taken to see to it that every casting is of top-notch quality. Take this illustration for instance, it shows a casting going through rigid X-ray inspection. And when X-ray inspection is necessary, it receives the same minute care taken in all other operations in the production of National Sand and Permanent Mold Aluminum Castings.

Bye-bye, Tojo!

TENUAL

ALUMINUM CASTINGS

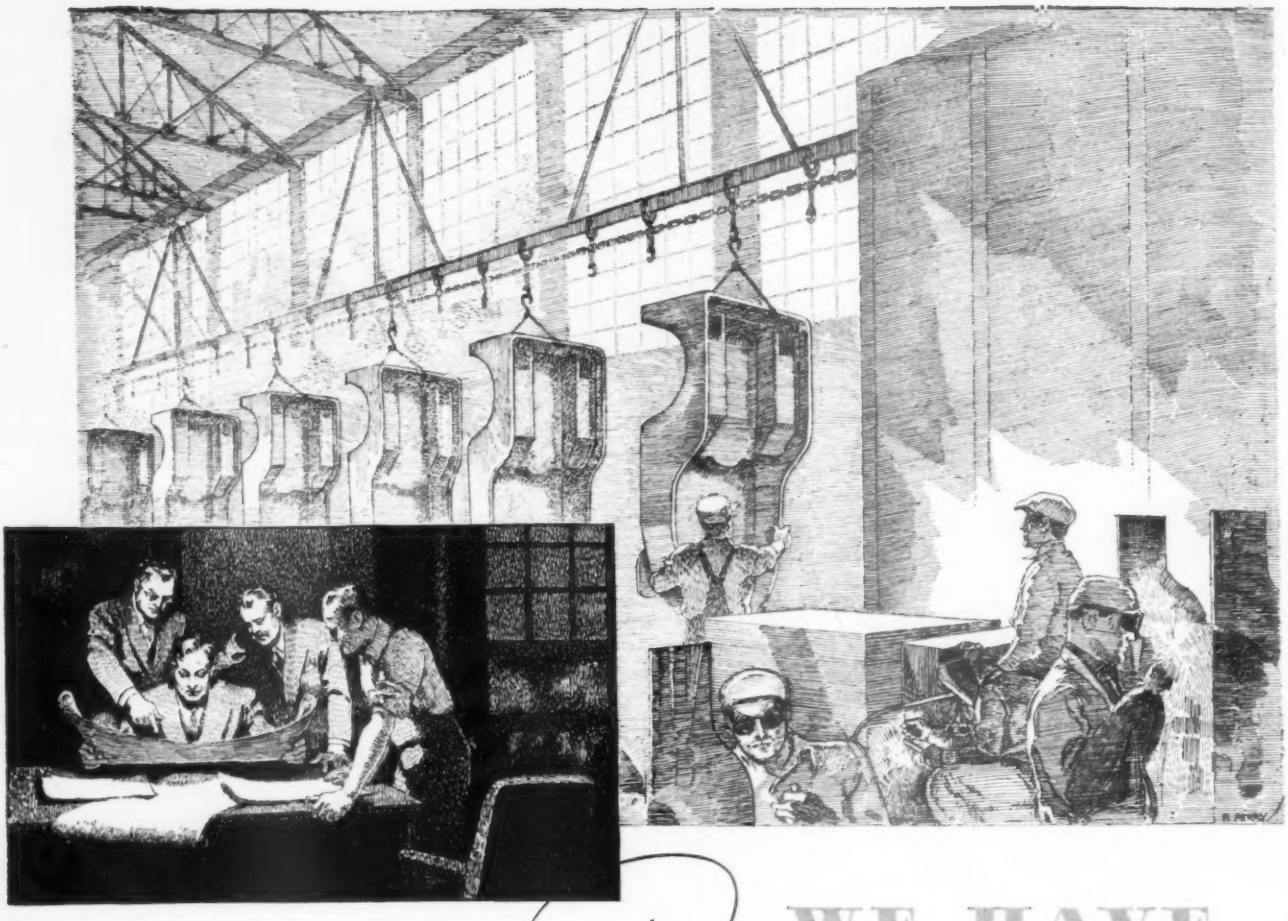
BUY MORE WAR BONDS AND STAMPS!

THE NATIONAL BRONZE & ALUMINUM FOUNDRY CO.

CLEVELAND, OHIO

NEW YORK—111 Broadway • CHICAGO—188 W. Randolph • DETROIT—Stephenson Bldg. • LOS ANGELES—405 S. Hill

MAKERS OF QUALITY SAND AND PERMANENT MOLD ALUMINUM CASTINGS



WE HAVE *Midnight oil* TO SPARE

True, we used quite some when the emergency started, and then some more when the call became more urgent. But all this made possible the various achievements of the men of American Central as they stand today. • From processing formed steel sinks, steel kitchen cabinet equipment, metal refrigerator stampings and numerous furniture parts and items for peace-time necessities we turned every effort to war-time needs. It took some long, tense hours of planning before we were ready to start. Now we are really rolling and will continue to step up the pace until Peace is assured. • When we turn again to the kind of peace-time production America, and most of the world will need, there's some of that precious "Midnight Oil" to spare.

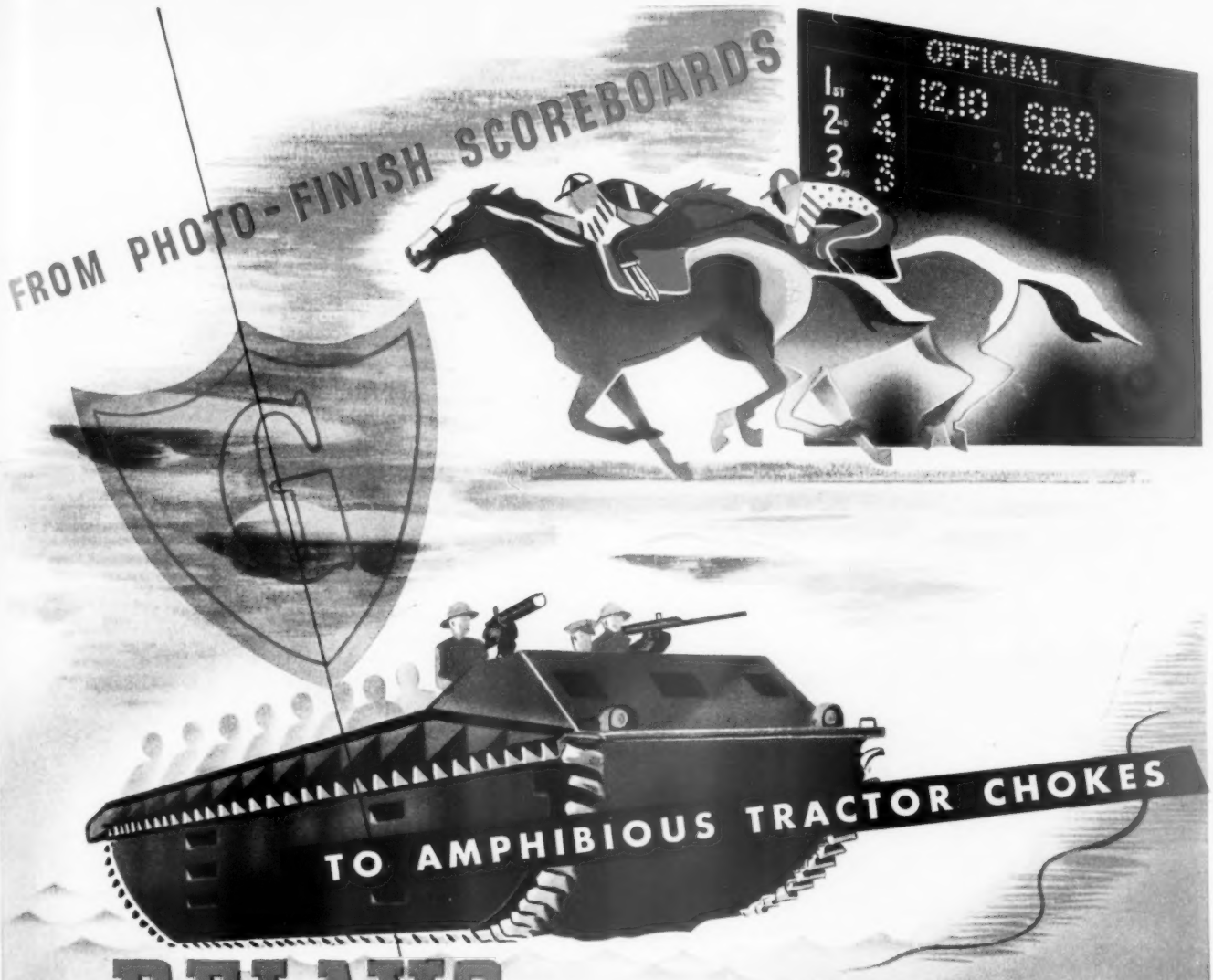
AMERICAN CENTRAL MANUFACTURING CORPORATION

AMERICAN CENTRAL

MANUFACTURING CORPORATION

CONNERSVILLE · INDIANA

When writing American Central Manufacturing Corporation please mention Purchasing

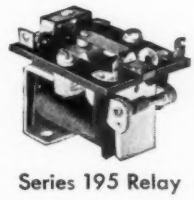


RELAYS BY GUARDIAN MEET ALL CONTROL NEEDS

★ **Whether the principle is electronic or magnetic . . . whether the job requires a tiny A.C. relay or a heavy-duty D.C. solenoid . . . whether time delay or instantaneous action . . . there is usually a "Relay by Guardian" to meet the "specs" on most applications . . . from animated electric signs to electric chokes for the Army's amphibious tractors.**

A *Midget* Relay . . . for tight places . . .

The tiny series 195 relay shown at the right weighs less than an ounce, but it's a cocky and energetic little bantam . . . full of life and fight . . . in a small way, of course—but plenty sufficient for its job in aircraft, radio and other applications where small size and lightweight are at a premium. Like to know more about it? Write for Bulletin 195. No obligation.



Series 195 Relay

GUARDIAN ELECTRIC

WEST WALNUT STREET CHICAGO, ILLINOIS

A COMPLETE LINE OF RELAYS SERVING AMERICAN WAR INDUSTRY

When writing Guardian Electric Company please mention Purchasing

Every Eye Accident
PREVENTED
Saves Man-Power for War-Power
Install a Complete AO Eye Protection Program in Your Plant
The sooner our fighting forces get ALL the weapons and equipment they need, the sooner the final big offensive will begin. Make sure that no eye accidents occur in your plant to take irreplaceable workers from their jobs, to keep tools of war from our boys at the front.
American Optical Company, pioneer manufacturer of eye protection equipment, is prepared to give you the benefit of long and varied experience in promoting eye safety. AO offers a complete line of comfortable protective goggles—a design for every type of eye hazard . . . free posters, helpful literature, and the services of a highly trained AO Safety Representative—to cooperate with your Safety Director. Get in touch with your nearest American Optical branch office today.
American Optical
COMPANY
SOUTHBRIDGE, MASSACHUSETTS

Performance

Timken's Middle Name!

Now more than ever the big issue is performance. It is fortunate therefore, that the backbone of America's highly efficient, nation-wide production line is comprised of millions of essential machines that are Timken Bearing Equipped. The Timken Roller Bearing Company, Canton, Ohio.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS

When writing The Timken Roller Bearing Company please mention Purchasing

The Brass Industry has come a long way . . .

SINCE BRASS-MAKING SKILL WAS SMUGGLED IN WINE-CASKS

TIME WAS, when brass-making was a matter of individual skill built on hit-or-miss experience. And the master brass-casters, whose secrets were their capital, would part with their lives sooner than their knowledge. Yet there were all too few of these men, which sometimes meant that, to start a new brass foundry in America, a caster or two had to be spirited from England in a wine-tun. Also, it meant that brass-quality was variable, sometimes a strange and wonderful thing.

But brass-buyers broke up that situation by demanding that brass meet definite specifications uniformly and consistently. Then real progress began. And now at Bristol, it's taken as a complaint when a customer remarks: "You people make brass that's right on the nose only 99% of the time!"

Nowadays, the uniformity of the different analyses . . . specified for Bristol sheet, rod and wire . . . is watched with the vigilance of a front-line sentry. Because up to the front lines is where it's going, in cartridges, shells and other war material. And, for this fighting service, no effort is left unmade to produce brass "on the nose" 100% of the time. Apparently this is actually being done, *for we have heard no word to the contrary.*

MAKERS OF BRASS SINCE 1850

THE *Bristol Brass* CORPORATION

BRISTOL, CONNECTICUT, U. S. A.

When writing The Bristol Brass Corporation please mention Purchasing

Railroads *made Hitler*

the sick man of Europe

HIS RAILROADS . . . AND OURS. **HIS** because he neglected them . . . caused the railroad break-down inside Europe, first of the internal German collapses the civilized world longs to see. **OURS** because American railroad men, handling history's greatest traffic with fewer cars and engines, *are* the miracle men Hitler would have liked his Germans to be. Koppers, making many railroad products last much longer, saves railroads hundreds of thousands of priceless man-hours. *Example:* Locomotives once were laid up every 25,000-45,000 miles for new piston packing. Now locomotives having Koppers American Hammered packing average 100,000 miles, and have hit a quarter million. *Example:* Railroads once tore up millions and millions of ties a year. *Decay!* Now pressure-creosoted ties last 20-30 years instead of 5-6. *Example:* Railroads own 370,000 buildings. Koppers coal-tar materials keep maintenance effort at a minimum on the roofs of thousands of these.— Koppers Company, Pittsburgh, Pa.

Buy United States War Bonds and Stamps

KOPPERS

THE INDUSTRY THAT SERVES ALL INDUSTRY

CLEVELAND

makes them of greater strength and accuracy by the Kaufman Process

● Without interruption for 26 years, our objective has been to produce highest quality cap screws and other threaded products. The only "conversion" required of us for assisting the war effort has been to concentrate on those sizes needed for war-implement fabrication. Production by the Kaufman Process—our own plant development—continues to add the qualities of extra toughness and accurate fit to the millions of pieces destined for tough fastening jobs. Your requirements on essential work may fit in with our present manufacturing schedules. Write for delivery possibilities and prices.

THE CLEVELAND CAP SCREW COMPANY
2917 East 79th Street • Cleveland, Ohio

Cleveland Cap Screws

Set Screws and Special Upset Parts

Made by the Originators of the Kaufman Process for Greater Strength and Accuracy
Specialists for 26 years in Headed and Threaded Products

WAREHOUSES

CHICAGO: 726 W. Washington Blvd.	**HAY**market	**1392**
PHILADELPHIA: 12th & Olive Sts.	**POP**lar	**7530**
NEW YORK: 47 Murray St.	**BARC**lay	**7-5088**
LOS ANGELES: 1015 E. 16th St.	**PROS**pect	**8326**

When writing The Cleveland Cap Screw Company please mention Purchasing

MORE POWER TO THE NAVY, MR. SECRETARY

OFFICIAL U. S. NAVY PHOTO

Incorporated 1850

Pennsylvania Salt Manufacturing Co.
Manufacturing Chemists.
Widener Building
Philadelphia

Leonard T. Beale
President

March 13, 1943

The Honorable Frank Knox,
Secretary of the Navy,
Washington, D. C.

My dear Mr. Secretary:

In our opinion no post in the cabinet carries greater responsibilities than the one you so ably fill. You have the duty of administering a fighting navy that must be ready for action on and under any of the seven seas -- and even more than that ... a navy which has taken to the air, with telling consequences.

Today everyone appreciates the vital need of keeping the navy supplied with planes and more planes -- bombers, fighters, training ships -- as well as with the escort vessels needed to assure their safe delivery. We in industry must do all we can to help the navy of the skies, the seas and under the seas achieve and hold superiority wherever it meets the enemy.

Naturally, the call for the immense production of aircraft had first to be answered by the aluminum industry. Manufacturers of aluminum have responded with vastly increased output of metal -- and with plans to break even today's astonishing records.

In this important program we are privileged to play a part. We supply Kryolith, an indispensable flux, which makes possible the manufacture of metallic aluminum.

To be able to supply Kryolith, and other products for essential wartime service in other fields, is a source of pride and satisfaction to every member of our organization.

Yours for Victory,

Leonard T. Beale

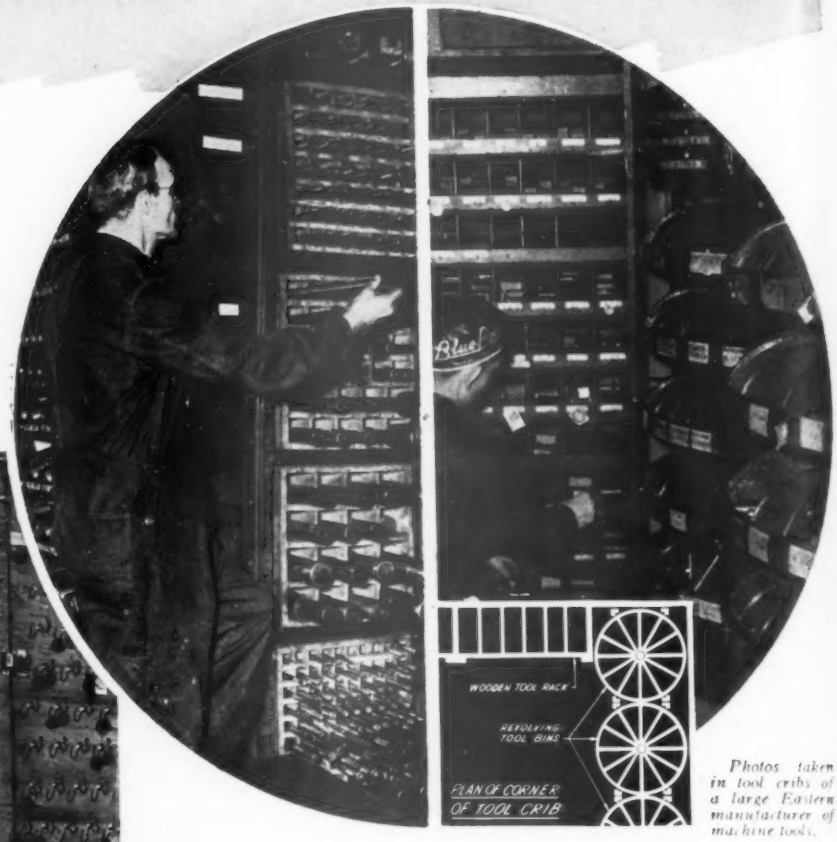
PENN SALT *Chemicals*

Tool Conservation BEGINS IN THE TOOL CRIB

Broaches (in circle, left) that formerly took much more space when spread lengthwise on flat shelves, now fit easily into these bins. Clear visibility and convenience to the delivery window mean less waiting time for these tools

•

Revolving bins (in circle, right) make the most of every square foot of space, give ready access to their contents. Sketch indicates how former "dead corner" was saved, and space made for wooden tool racks.



Photos taken in tool cribs of a large Eastern manufacturer of machine tools.

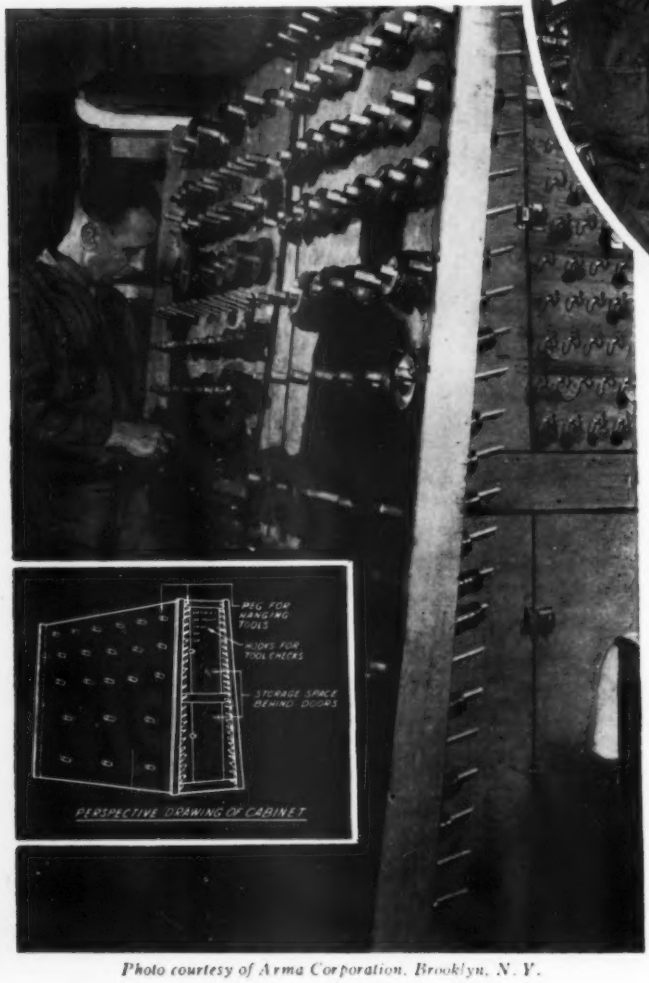


Photo courtesy of Arma Corporation, Brooklyn, N. Y.

Dead Space usually found in center of crib utilized by double deck "slanting-side" cabinet. Tools hang on sides, bulky items are stored inside. Doors are used for "in and out" tool checks.

AND Saves Space TOO!

Perhaps you've been thinking, "Yes, I'd like to plan my tool crib to take better care of my tools — but the plant can't give me more floor space."

Then you'll be interested in seeing how some plants improved their tool storage, and saved space too!

As these photographs show, space may be saved by:

1. Rearrangement of storage facilities.
2. Alteration or substitution of equipment.
3. Utilizing waste floor or wall space.

Yes, your tool crib can pay big rewards for a little careful thought.

GTD GREENFIELD

TAPS · · · DIES · · · GAGES · · · TWIST DRILLS · · SCREW PLATES

ARMY E NAVY

GREENFIELD TAP AND DIE CORPORATION

GREENFIELD, MASSACHUSETTS

DETROIT PLANT: 5850 Second Blvd.

WAREHOUSES in New York, Chicago and Los Angeles.

In Canada:

GREENFIELD TAP AND DIE CORP. OF CANADA, LTD., GALT, ONT.

When writing Greenfield Tap and Die Corporation please mention Purchasing

We waited 4 Years to make this *Announcement*

★ ★ ★

EARLY IN 1938, Shell Scientists and engineers, after long tedious months of experimenting, were ready to give a new turbine oil its supreme test. Exhaustive laboratory analyses had shown it possessed properties previously thought unattainable by even the most optimistic turbine manufacturers.

But Shell men were not satisfied. "How will this new turbine oil stand up under actual operating conditions?" was the question they wanted answered.

There was but one way to find out . . . test it in turbines. They did. After a 2-year run, samples taken showed every characteristic of the original oil. Further checking was done . . . other tests were made. It still looked "as good as new."

Then, and only then, was the new Shell Turbo Oil announced. That was in January 1941. Even then many operators were doubtful that Shell Turbo Oil was as good as we claimed. "It hasn't been in use long enough," they said.

Today Shell Turbo Oil is able to show a performance record that should convince the most skeptical. For after more than 30,000 hours of operation in a power company's turbine, Shell Turbo Oil tests as well as the day it was put in over 4 years ago. To the original filling of 4,400 gallons only 300 gallons of make-up oil have been added. Certified chemical analyses of samples taken from the turbine show no signs of deterioration on any score.

30,000 hours of operation, in itself, is no record for a turbine oil. But 30,000 hours *without a single sign of structural breakdown* is a record in which every turbine operator should be interested. It is but one of scores of records being set by the new Shell Turbo Oil in all types of turbines.

Here is proof positive that the new Shell Turbo Oil has *the two most important* characteristics necessary to the proper lubrication of modern turbines:

SUPERIOR OXIDATION STABILITY
RUST PREVENTION

Ask the Shell man for the details today!

(Currently, the U. S. Navy has first call on Shell's entire production of marine turbine oil.)

Shell Turbo Oil

SHELL

Banish this Saboteur of War Products

■ War products for our fighting forces demand the utmost in skilled workmanship and fine materials. But equally important as their production is the getting of these war products to their destinations, unbroken and unmarred, *in fighting condition.* Defective packing can undo the best of factory work. Defective packing is a saboteur of war products...a saboteur that you can easily foil if you pack with KIMPAK* Creped Wadding.

With KIMPAK-protection, war products are cushioned from jolts, jars and rough handling in transit . . . for KIMPAK combines softness with resiliency. Breakage, chipping and chafing are well-guarded against. And because KIMPAK is 100% grit-free, highly polished surfaces are shielded against scratches, press markings and "burning". If your war product must be protected against moisture, there's a special *moisture-resistant* KIMPAK to do the job. And if leakage from glass containers is your problem, there's a type of KIMPAK that can absorb 16 times its own weight in liquids!

Manufacturers of metal, plastic, wood and glass war products are finding KIMPAK the right answer to their packing protection problems. Whether *your* war product is as large as a bomber's wing or as small as a wrist pin. KIMPAK can serve you, too! Write for details today.

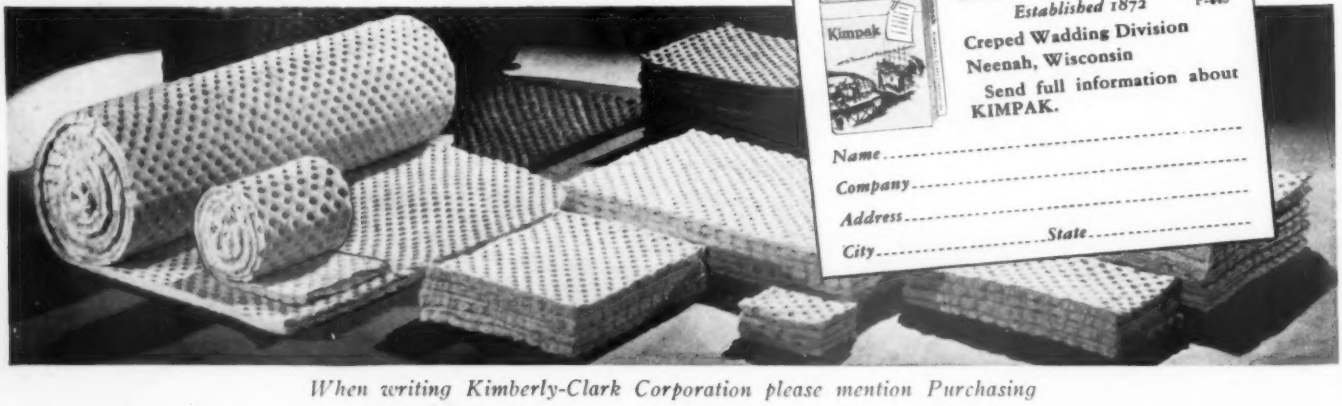
PACK WITH

Kimpak

REG. U.S. PAT. OFF. & FOREIGN COUNTRIES

CREPED WADDING

*KIMPAK (trade-mark) means Kimberly-Clark Wadding.



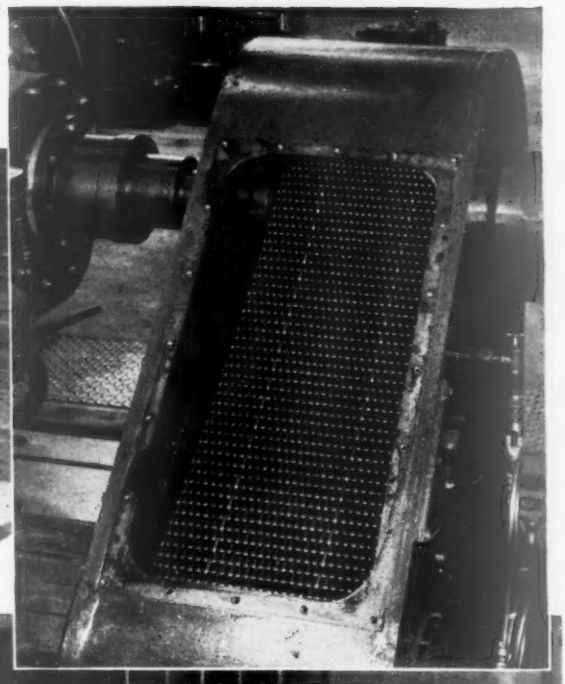
Kimberly-Clark Corporation
Established 1872 P-448
Creped Wadding Division
Neenah, Wisconsin
Send full information about KIMPAK.

Name.....
Company.....
Address.....
City.....State.....

When writing Kimberly-Clark Corporation please mention Purchasing

TANK DRIVE UNITS

Given "the works"



High Efficiency of Silent Chain Drives Provides Precision Mechanical Testing

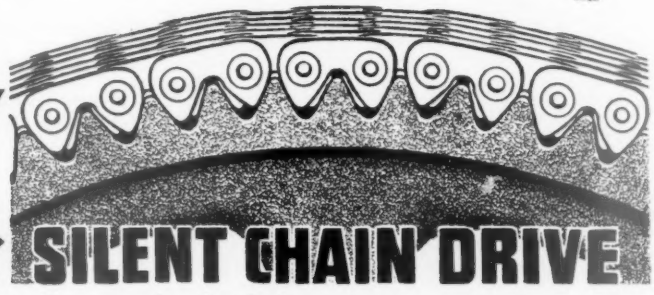
Twin Disc Clutch Co. has been testing hydraulic torque converters, used on tanks, by the "four-square" method, employing two large dynamometers and a motor-generator set. Increased production of th unit created a need for a second test rig.

Two 660 H. P. high-speed Link-Belt Silverstreak silent chains and sprockets with jack-shaft and couplings, now duplicate the function otherwise performed by one dynamometer and the motor generator.

The output shaft of the torque converter operates at 750 r.p.m. with a chain speed of 4220 feet per minute. This turns the jack shaft, which in turn drives the second silent chain, at 4450 f.p.m. and transmits its power to the input shaft of the converter. Chains are oiled by pressure spray oilers designed and built by Twin Disc engineers. The users report completely satisfactory results have been accomplished with the two Silverstreak silent chain drives, which have permitted them to double their testing facilities without delay. Link-Belt Company, Indianapolis, Chicago, Philadelphia, Atlanta, Dallas, San Francisco, Toronto. Offices, Warehouses and Distributors in Principal Cities.

9032

LINK-BELT
Silverstreak



SILENT CHAIN DRIVE

When writing Link-Belt Company please mention Purchasing

There are GRINDLINS *too, as well as* Gremlins

As the fiendish little Gremlins dance on the wings of the airplane, and ride the radio beams,

just so, devilish little Grindlins tease and hamper the precision grinding machine operator.

"Your wheel is too soft, buddy," gleefully chirps the Grindlin. "Too soft, nix," says the voice of experience. "I true it more frequently because it has worn down to a smaller diameter."

"Ah, I've made your wheel glaze," he taunts. "True enough, you young imp" is the retort, "but I'll just increase the work speed, then watch it cut."

Think this over: Why be heckled by Grindlins while production lags. Norton engineering experience has met up with all their tricks that slow production and impair finish.

NORTON COMPANY · Worcester, Massachusetts
Behr-Manning Division—Troy, N. Y.

NORTON ABRASIVES

When writing Norton Company please mention Purchasing

"SEVENTY BELOW"

. . . . IS TOUGH ON HOSE LINES

AEROQUIP has met the low temperature challenge. First, in the factory, then in the field. In our own laboratory, we researched this problem at temperatures as low as —70° F.

At (censored), combat planes were grounded for winterization. Aeroquip met this sub-zero challenge with new Aeroquip low-temperature hose and Aeroquip detachable hose fittings. Planes were fitted with new hose lines tailored on the spot—a fast, emergency field service which sent them back into fighting service without delay.

Aeroquip detachable hose fittings simplify field base replacements by reducing the thousands of combinations of sizes and lengths of hose lines to dozens of fittings and sizes of hose. These detachable hose fittings are instantly re-usable with new Aeroquip hose for hose line repairs. These are fighting advantages for our air forces.

SPECIFY

AEROQUIP

HOSE LINES

SELF SEALING

COUPLINGS

West Coast Office—
1709 West Eighth St.,
Los Angeles, Calif.

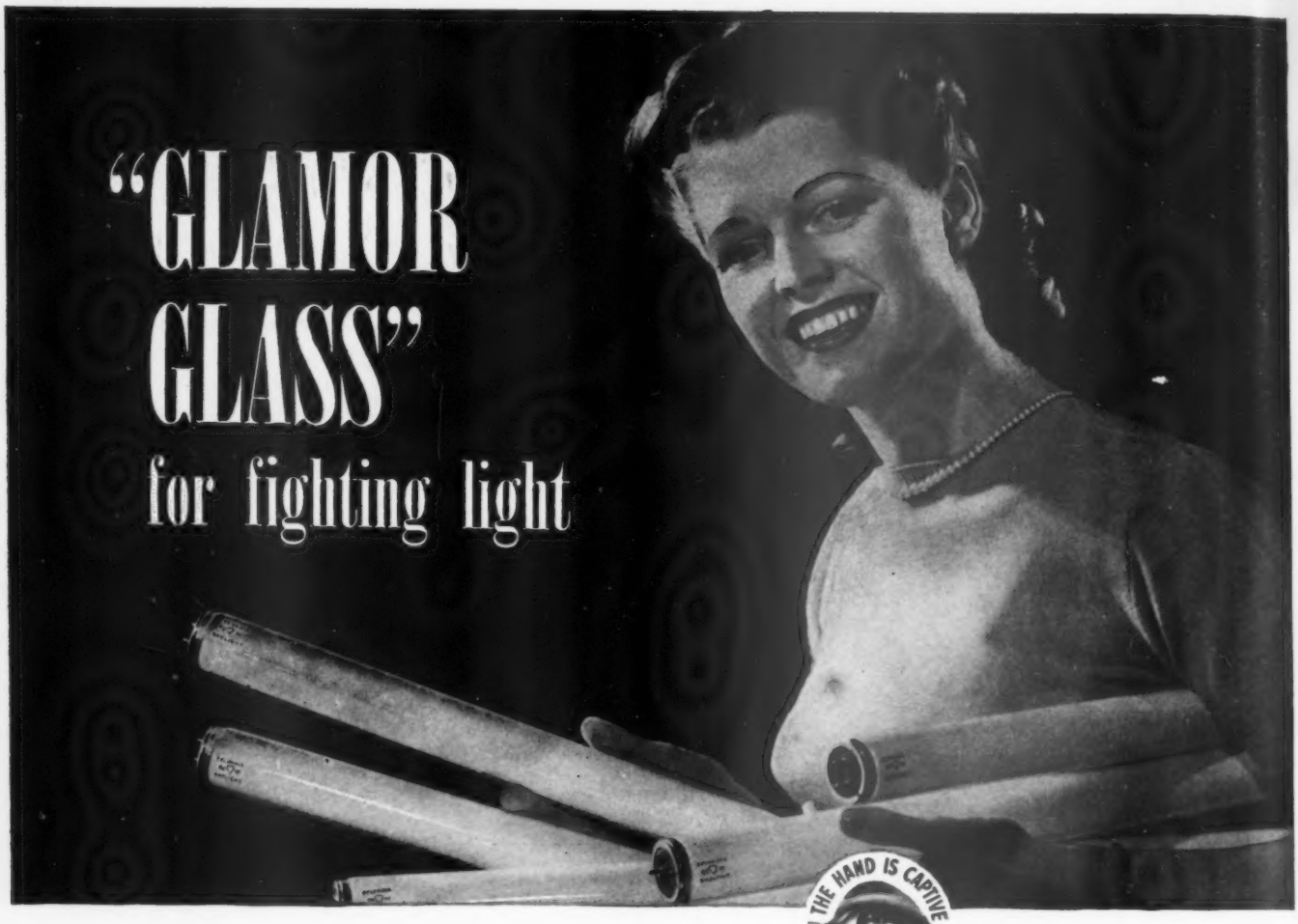
Eastern Representative—
J. Henry Reisner,
Hagerstown, Md.

Southwestern Representative—
James A. Hughes,
Love Field.
Dallas, Texas

Canadian Representative—
Prenco Progress & Engineering Corp.
7274 Stafford St.,
Toronto, Canada

AEROQUIP CORPORATION
JACKSON, MICHIGAN, U. S. A.

When writing Aeroquip Corporation please mention Purchasing



● There is glamor in the glass that houses the electronic miracle of fluorescent lamps. These long light sources provide the cool, shadowless, glarefree illumination that works a "charm" in speeding war production in plants all over America.

There is glamor, too, in the careful "beauty salon" treatment of glass at Sylvania. Before acceptance it undergoes 16 different inspections for possible imperfections. It is handled with gloves — to avoid possible contamination from contact with human hands. It is even washed, dried, brushed, and vacuum-cleaned in air-conditioned rooms.

Sylvania "glamor glass," like the development of the "Mercury Bomb" method of precise mercury measurement, is a formula that conserves vital metals for war. But all the material and process changes, made continually at Sylvania, must and do step up fluorescent performance and effect important economies.*

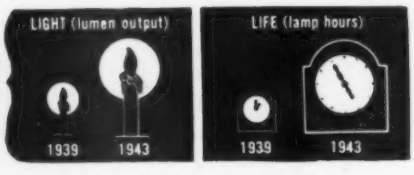
It is because of Sylvania's many years of independent and aggressive research that fluorescent, today the best industrial lighting, is destined to light our homes, offices and stores when Victory is won.

To obtain research dividends of more light output, longer life and uniform color, specify Sylvania Fluorescent Lamps — each one better than the last — for replacements.

FAR MORE LIGHT AND LIFE FOR YOUR MONEY

*Compared with 1939 a dollar invested today in Sylvania Fluorescent Lamps buys more than four times the lumen output and approximately five times the lamp life.

SYLVANIA FLUORESCENT DOLLAR BUYS:



(Based on decreasing price and increasing efficiency and durability of Sylvania 40-Watt White Fluorescent Lamp)

Even on existing circuits, a change-over to fluorescent—Sylvania Lamps, Fixtures and Accessories—will probably more than double the light you get for the same wattage.

SYLVANIA

ELECTRIC PRODUCTS INC.

Formerly Hygrade Sylvania Corporation
Salem, Mass.

Incandescent Lamps, Fluorescent Lamps, Fixtures and Accessories, Radio Tubes, Electronic Devices.

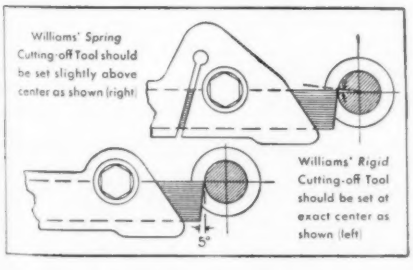
When writing Sylvania Electric Products, Inc. please mention Purchasing

HOW AND WHY

WILLIAMS' TOOLS AID WAR PRODUCTION

With Williams' Spring Cutting-Off Tool Holder, feed can be applied automatically leaving operator free to watch and thoroughly lubricate the work.

● Williams' Spring Cutting-Off Tool Holder makes comparatively simple a lathe operation normally one of the most difficult. Several advantages result from the "goose-neck" design of this Holder which automatically provides relief from any sudden or excess pressure on the cutter blade. Even an inexperienced operator can cut off work considerably out-of-round without chatter, "climbing" or damage to either tool or work. The shock-absorbing qualities of this Spring Head, likewise, tend to protect lathe bearings and journals and will definitely improve the quality of work done on old and "loose" lathes. Only with this type of Spring Holder can the automatic cross feed be used for cutting-off operations.


Williams' Spring Cutting-off Tool should be set slightly above center as shown (right)
Williams' Rigid Cutting-off Tool should be set at exact center as shown (left)
5°

USE OF WILLIAMS' CUTTING-OFF TOOL HOLDERS

In setting-up, the *spring* cutting-off tool should be set slightly above center. A *rigid* cutting-off tool, however, should always be set on exact center. See drawing at lower left. Cutters may be sharpened by grinding the end of the blade—usually to an angle of 5°. The sides of Williams' blades never need to be reground since they have sufficient taper throughout their length to provide side clearance. The work should be flooded with oil when cutting off steel. No lubricant is necessary with cast iron or non-ferrous metals.

WILLIAMS' SPRING CUTTING-OFF HOLDERS

Straight Shank Pattern
Four sizes, 3/8 x 31/32" to 3/4 x 1-5/8".

Right Hand Offset Pattern
Five sizes, 3/8 x 13/16" to 3/4 x 1-5/8".

The above illustrations show two patterns of Williams' Spring Cutting-Off Tool Holders—Straight and Right Hand Offset—and list the sizes in which these tools are available. The same blade fits either pattern in corresponding sizes.

Below are illustrated three patterns of Williams' Cutting-Off and Side-Tool Holder, and sizes listed in which each is available. This Holder accommodates either a cutting-off or side blade without any adjustment. It is a *rigid* rather than *spring* tool. Its cutting-off blade is interchangeable with Williams' Spring Holder. Both these types of Williams' Holders employ a positive cam lock to hold their blades in place, which is both quick-acting and rugged.

WILLIAMS' CUTTING-OFF AND SIDE-TOOL HOLDERS

Right Hand Straight Shank Pattern

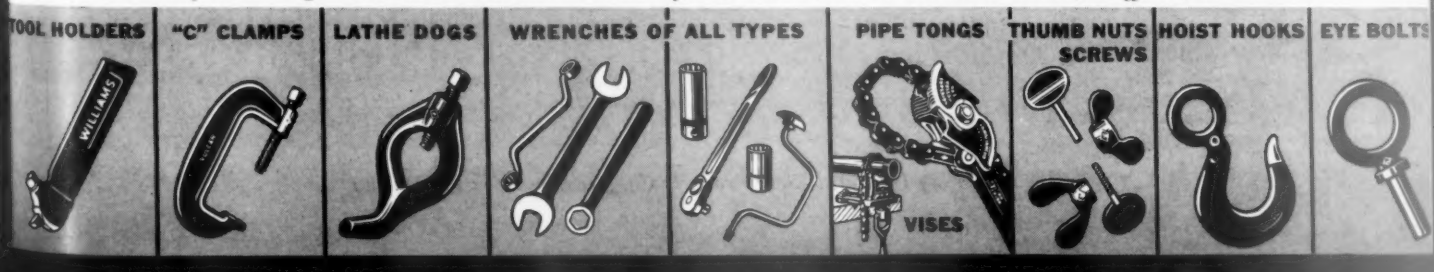
Left Hand Offset Pattern

Right Hand Offset Pattern

All patterns are made in seven sizes, 5/16" x 13/16" to 7/8" x 1-3/4".

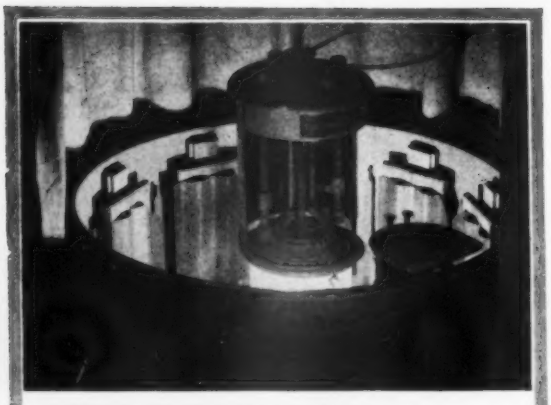
WILLIAMS
SUPERIOR DROP-FORGED TOOLS
Headquarters
for over half a century for
DROP-FORGINGS and DROP-FORGED TOOLS

Sold by Leading Industrial Distributors Everywhere . . . J. H. Williams & Co., Buffalo, N. Y.



Weather-Tested

against { HEAT, MOISTURE, COLD, ACID FUMES



WEATHER-TESTED FOR EXTREMES — Here, in the Weather-Ometer, A P S panels were exposed to arc-light at temperatures up to 140°F., and then tested in cold-box at 10°F. below zero!

1 **Steel protects the structure**

2 ***Weather-Tested*** **compound protects the steel**

3 **Mica protects and reinforces the** ***Weather-Tested*** **compound**

APS

ROOFING • SIDING • FLASHINGS

The wide acceptance of A P S Roofing, Siding and Flashings is indicated by [illegible] number of outstanding [illegible] edly for us[illegible]s.

Available NOW!
for **MAINTENANCE** *and* **REPAIRS**
...as well as new construction

[illegible] the [illegible] usive fea[illegible]

A P S Sheets are manufactured by a carefully controlled process in which the heated sheet is coated with a molten plastic compound and impregnated with mica for added protection.

A P S Sheets are available through your local jobber

5

PROTECTED STEEL PRODUCTS CO.
General Office and Plant, WASHINGTON, PA.

When writing Protected Steel Products Co. please mention Purchasing

By Their Deeds Shall You Know Them

Our fighting men, on whom the hope of human freedom depends, have already shown what they can do. We know how deadly they are in action. Yet this is a tough war. Those who know the Japs best tell us that we cannot win by maintaining the pressure and breaking the morale of the enemy, as we did in 1918. This is definitely a war of *destruction*. Our fighting men are equal to the job; but they deserve and will need the best armaments that American industry can turn out. We'll give them better fighting equipment than any enemy can produce.

Such is the spirit that motivates the end less shifts at Kropp Forge, as they turn out an ever-growing volume of depend able forged parts for America's planes ships, ordnance, tanks and military ve hicles. Every forging up to standard and a determined effort to produce every forging on time. It's our fighting men that we're really working for. Armamen makers have learned that they can de pend absolutely on Kropp Forge for the parts that must withstand the impact and stresses of abusive service. Inquiries from ordnance builders are solicited

Proudly we fly the Army and Navy "E" flag and stars, awarded and re-awarded for excellence and proficiency in the production of war material.

KROPP FORGE COMPANY

Makers of Drop, Upset and Hammer Forgings for Ships, Guns, Planes, Tanks, Ordnance and Machine Tools

"World's Largest Job Forging Shop"

5301 W. Roosevelt Road

Chicago, Ill.

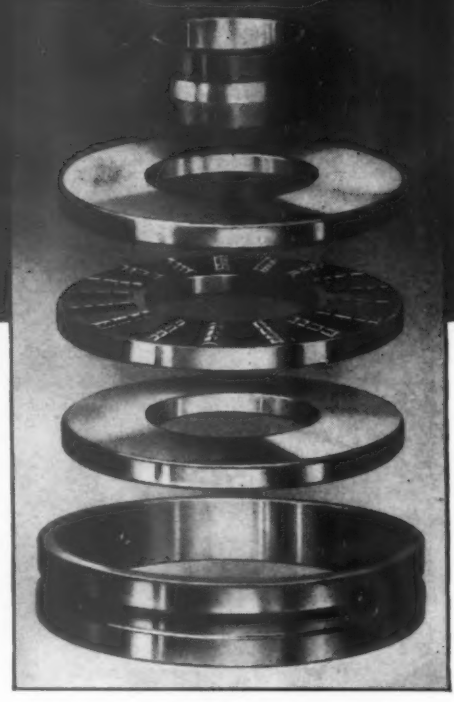
Engineering Representatives in Principal Cities

SERVING INDUSTRY 18 SINCE 31 KROPP FORGE CO. OVER 100 YEARS

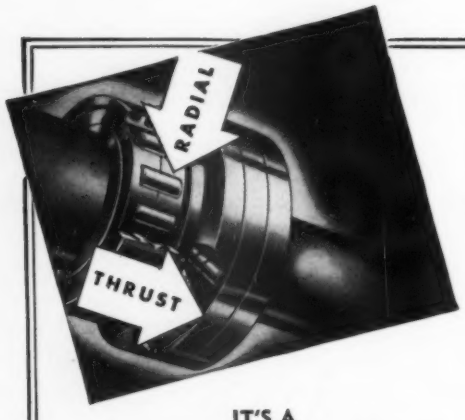
KROPP

For Longer Thrust-Bearing Life USE ROLLWAY'S Right Angled Loading

All loads carried at right angles to the axis on short and staggered solid-cylindrical rollers.
NO OBLIQUE RESULTANTS on rollers.



THE right-angle-loading rule for roller bearings is safer to follow because it's simpler. It splits complex loads so that the two fundamental components of pure radial and pure thrust are each carried at right angles to the roller axis. NO OBLIQUE RESULTANTS tend to squeeze the rollers from between the races. Thus, in thrust bearings, rubbing contact between the roller ends and the retainer is held to a minimum. In radial bearings, there is less wear-back on the radius of the races. Friction is reduced; bearing capacity increased. You don't have to depend upon maintained oil-film for low-torque starts. The net result is smoother running, longer life, reduced service cost, and less down-time due to bearings.



IT'S A
BASIC PRINCIPLE WITH ROLLWAY

- All radial loads carried at right angles to the roller axis.
- All thrust loads carried at right angles to the roller axis.

ALL ROLLWAY ROLLER BEARINGS ARE LOADED THE RIGHT-ANGLED WAY

One of the pioneer American manufacturers in the design and application of roller bearings to heavy industrial uses, Rollway has consistently specialized in the right-angled loading of solid-cylindrical roller bearings. That's because 35 years of experience has proved that no short-cut or compromise provides the same effectiveness and lasting qualities as these bearings in *pure radial and pure thrust types.*

SAE and AMERICAN STANDARD METRIC SIZES

Rollway has developed many variations of its solid-cylindrical roller bearings in SAE and American Standard metric sizes, each having definite characteristics to meet exacting needs. Take full advantage of this wide choice of types and sizes, and of Rollway's specialized bearing experience. Just send us your design, or ask for free, confidential bearing analysis and recommendation.

ROLLWAY BEARING COMPANY, INC., SYRACUSE, NEW YORK

BUILDING HEAVY-DUTY BEARINGS SINCE 1908 BEARINGS

When writing Rollway Bearing Company, Inc. please mention Purchasing

CORK PRODUCTS

GASKETS • OIL SEALS
PACKINGS
FLOATS
STOPPERS
FRICTION DRIVES

Armstrong makes cork's unique properties available for hundreds of industrial applications

NO other substance—natural or synthetic—possesses cork's combination of useful physical properties. These include: compressibility *without side flow*, resilience, high coefficient of friction, resistance to liquid penetration, light weight, stability, and low thermal conductivity.

Industrially, cork is most valuable in the form of fabricated compositions. Armstrong, with 83 years of manufacturing experience, knows how to combine granulated cork and various binders to produce compositions which have unique advantages for a wide variety of applications.

In the many cork compositions made by Armstrong, densities range from 8 lbs. to 36 lbs. per cu. ft.; degrees of compressibility from 5% to 60%; tensile strength from 60 lbs. to 450 lbs. per sq. in. From Armstrong you can obtain cork compositions coated with oil and graphite for use as oil seals . . . coated with synthetic rubbers, resins, or glue for imperviousness to certain liquids or gases . . . or laminated with cloth, treated paper, or fiber for additional mechanical strength.

Armstrong's Cork Products are furnished in sheets, rolls, die-cut parts, and fabricated shapes. Find out how cork and cork compositions can work to *your* advantage. Write Armstrong Cork Company, Industrial Division, 7204 Arch Street, Lancaster, Pennsylvania.

ARMSTRONG'S INDUSTRIAL SPECIALTIES

Natural Cork Products: Balls, Closures, Floats, Polishing Wheels . . . and others; *Cork Composition Products:* Balls, Bulletin Board, Carboy Cushions, Expansion Joint, Friction Parts, Gaskets, Polishing Wheels, Ribbon . . . and others; *Mechanical Specialties:* Synthetic Rubber, Cork-and-Synthetic-Rubber, Cork-and-Rubber; *Rag Felt Papers:* Sheathing, Vibration-Damping; Gasketing, Space-Packing, Specialties; *Transportation Floors:* Linoleum, Plain Automat, Ribbed Automat, Mastic Armoflor, Traffex; *Aircraft Materials:* Wingwalk, Airoflor, Glazing Strip, Cushion Pads, Gaskets, Packings, Seals; *Fiber Sheet Packings:* Fibrated Leather and Plant Fiber types.

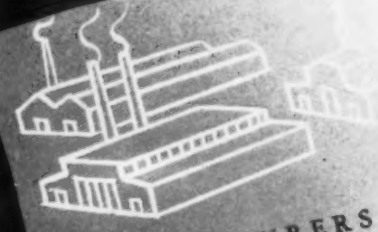
The specialties listed above are just a few of the more than 350 dependable products—for victory, industry, and home—which are made in the 15 plants of the Armstrong Cork Company.

ARMSTRONG CORK COMPANY

INDUSTRIAL DIVISION

When writing Armstrong Cork Company please mention Purchasing

PRODUC-TROL...the Answer to Industry's Problem of MATERIAL CONTROL



MANUFACTURERS OF

PRODUC-TROL

PRODUC-TROL TELLS YOU INSTANTLY WHAT OPERATION IS BEHIND SCHEDULE in . . .

- PRODUCTION SCHEDULING
- MACHINE LOADING
- MATERIAL CONTROL
- CONTRACTING
- SUB-CONTRACT CONTROL
- INDIVIDUAL ORDER SCHEDULING
- CONTROL OF PARTS INTO ASSEMBLIES
- PARTS PRODUCTION IN LOTS BY OPERATION
- PURCHASING
- TOOL CONTROL

WASSELL ORGANIZATION
WESTPORT, CONN.
Telephone Westport 2-4743

March 10, 1943

250 West 57th St.,
New York City

Gentlemen:

Is there any way in which you can frame an ad that will get over to business executives, the fact that, MATERIAL CONTROL is one thing that is good business in peace and in war?

Many top executives blow up at the required paper work and its clerical cost when, in reality, it is not paper work but mis-management of the flow of facts. Jones, of Jones Co., calls Smith, President of Smith Co., to ascertain a fact. Instead of having a properly-recorded fact with which to reply, Smith calls the production manager, the production manager calls the plant manager, the plant manager calls the foreman and the foreman sends an expediter out to ascertain the status. Meanwhile Jones, a thousand miles away, holds the phone. Five minutes before, Smith had been cursing Washington for boondoggling!

After twenty-five years experience, this has naturally become a joke to me. Especially when THE MEANS IS AT HAND to eliminate all such foolishness. Sure, Washington is wrong in many cases. But are we business men any better?

As you know, we have, in PRODUC-TROL, the answer to most of these problems - particularly Scheduling Material Control in any form.

I do not want this ad to in any way rub business executives the wrong way, but I would like to have it worded in such form that they will laugh at their own short-comings and act immediately to control them by installing PRODUC-TROL.

Sincerely yours,

F. Lloyd Wassell

FLW/mab

Mr. Wassell-

Because this letter points an honest and forthright question regarding the much discussed Controlled Materials Plan for industry, because it contains the best answer to the problem, it is reprinted here as received by us.

Advertising Agents
for
Wassell Organization

IN 700 WAR PLANTS PRODUC-TROL IS SPEEDING PRODUCTION

PRODUC-TROL controlling purchase and production of material for tanks at American Car & Foundry Co.

- **WHAT PRODUC-TROL is doing for others it can do for you.**
- **"SPOTLIGHT", illustrating the complete PRODUC-TROL line, is yours for a line on your business letterhead.**

Our production is 100% war orders. All orders for PRODUC-TROL must bear priority numbers.

If "information" cannot give you the telephone number of PRODUC-TROL in your city, phone, wire or write—

WASSELL ORGANIZATION
WESTPORT, CONN.

PHONE WESTPORT 2-4743

PURCHASING PREVIEWS

From the Washington office of

PURCHASING

National Press Building
Washington, D. C.

April 1, 1943

For Purchasing Executives:

Top Military Procurement Officers indicate that "We're over the hump" on production. This does not mean that the size of the program will taper off, but that further expansion of industrial capacity is not required to meet the needs of the various theaters of battle. Large orders are yet to be placed. However, existing plant facilities are considered adequate to meet these orders.

The military supply arms are no longer working on a hand-to-mouth basis. Where previously it was necessary to route materiel from production lines to meet waiting convoys, supplies are now being accumulated at depots for shipment. There are still production bottlenecks, but stoppage of expansion——expansion having diverted materials from actual production——and emphasis on production will permit a guaranteed flow of materials to producers of critical components.

The feeling of optimism over the flow of production is predicated on both the quantity and quality of the weapons being produced. Quality of aircraft which is being manufactured by U. S. industry has been proven on both an engineering and on actual combat basis. U. S. Army Ordnance officers are high in their praise of the tanks and guns with which we are equipping our Army. Their judgment is likewise predicated on battle experience.

Acid test is still to come as the battles on all fronts broaden. The major problem is now considered to be supply, rather than production. The job is to provide the proper weapons and equipment in the area where needed, and in a quantity sufficient to insure superiority over the enemy at each front.

* * *

Pressure on Price Ceilings is becoming more acute. The Office of Price Administration is considering lifting the ceiling on luxury goods as a safety valve. A higher profit margin return to distributors and retailers on luxury goods will compensate sellers for the slim margins permitted on essentials. In this way sellers will be able to maintain themselves in business, without increase in the ceiling prices on cost-of-living commodities.

The greatest problem is the consistent demand on the part of labor for increases in wages. The cycle which is forcing rise in prices has been continuing in a slow upward spiral——but Government controls have been an effective drag. If wage increases are permitted, there will be a sharp kick-off, and price rises will be accelerated.

OPA Administrator Prentiss M. Brown has indicated that he will fight to hold price ceilings at the levels stipulated by the Price Control Act He is strongly opposed to any wage increases which exceed the "Little Steel Wage Formula" (January, 1941 wage levels plus 15 percent——representing cost of living increase from the January date through May, 1942, when President Roosevelt announced his economic stabilization program).

Administrator Brown has overcome some of the political difficulties of his predecessor in office. The question is whether he can show the same degree of resistance to the economic pressures on the price ceilings.

Post-War Economy Plans are being aired for discussion here in much the same manner——and for the same general purpose——as is the Beveridge Plan in Britain. In each country the plans advanced represent the peace aims of the Governments insofar as the domestic economy is concerned.

The British reconstruction problem will be complicated by the large scale destruction of plants and industry. In addition, British industry was decentralized, and organized on an emergency basis to overcome the bombing peril.

In contrast, U. S. industry has been expanded through construction of new and efficient plants. These plants have been tooled up through the largest output of machine tools in the history of machine tool building.

Question looming in Britain is how the economy of that nation can be reconstructed to provide adequate standards of living to the populace despite the disorganization of productive facilities. The Beveridge Plan presupposes the leveling off of the standard of living of the entire as a means of insuring certain minimum standards for all.

In like fashion, the post-war plan prepared for this country by the National Resources Planning Board proposes that the Government guarantee minimum standards. The plan takes into consideration the inevitable dislocation of the economy in the shift from a war economy to a peacetime production basis. There is no question of the adequacy of the nation's productive facilities to establish and maintain a high standard of living. The plan, however, anticipates a post-war control problem when consumers come into the buying market to replace durable goods which have been worn out. The collective impact of these buyers on the market, at a time when manufacturers still are not in full production, would provide the basis of an immediate post-war boom, but this would, in turn, be tinctured with the possibility of an economic collapse.

That National Resources Planning Board report will provide many of the issues of the 1944 Presidential campaign. It is not proposed as a plan to be put into effect immediately. Some of the measures proposed will be supported on a non-partisan basis. Other elements of the report will encounter violent opposition.

* * *

WPB Chairman Donald Nelson is considering measures to keep machine tool builders in the production picture. The demand for machine tools has been tapering off, freeing facilities, management and highly trained labor.

The problem of the tool building industry will be reflected to a lesser degree in other phases of production, as battle experience requires change in emphasis on production of weapons. Probable approach is a close scrutiny of industry's order boards, with a view toward spreading the work, and keeping qualified producers busy.

* * *

Industrial Power Supply Outlook is considered "adequate" during the remainder of this year, but conservation practices are recommended, with a "pinch" in supply forecast for 1944. Shortages may develop on an area basis. Transportation of fuel and labor will be large factors in any campaign for conservation, with the likelihood that non-essential uses of lighting and power will be further curbed.

Will your war products pass this final inspection?

Over rail . . . across miles of enemy-patrolled water . . . through trail-less jungles . . . this shipment got there, because it was shipped right and strapped right. It passed the final inspection—safe arrival. Acme Steelstrap assures safe protection to every type of shipping pack . . . complies with all Federal Strapping Specifications.

DAMAGED SHIPMENTS HELP THE AXIS

American and Allied soldiers may be seriously handicapped—even placed in jeopardy—because the war product you're making doesn't arrive in perfect condition. Remember, no product becomes a real war product until it is safely in the hands of those who will use it.

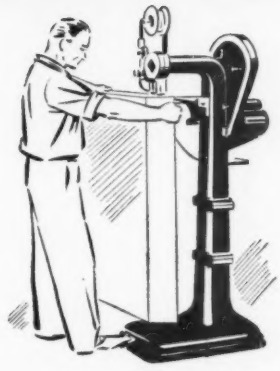
"BOUND TO GET THERE" WITH Acme Steelstrap

A product that is Acme Steelstrapped is assured of maximum protection. Besides, container material is conserved, handling speeded, costs cut . . . and shipping space reduced. There is a type of Acme Steelstrap for every type of war package. Send for free, helpful literature now.

Strapping is speedy and easy with Acme Steelstrappers which tension, seal and cut the strap with a single stroke of two levers. The tool is equipped with an automatic seal feed.

Cartons of metal parts are made "Bound to Get There" with Acme Steelstrap. The Acme Process keeps the packing room in step with production.

CARTON STITCHING DOUBLED



BY LOW-COST

Acme SilverStitchers

Many war product manufacturers have doubled their output of stitched cartons. Others are saving more than 30% in material and labor. Nor are these isolated cases—Acme Silverstitchers are helping in hundreds of war plants—making box stitching easier and faster for men and women operators—helping to keep the packing room in step with production—and incidentally cutting costs.

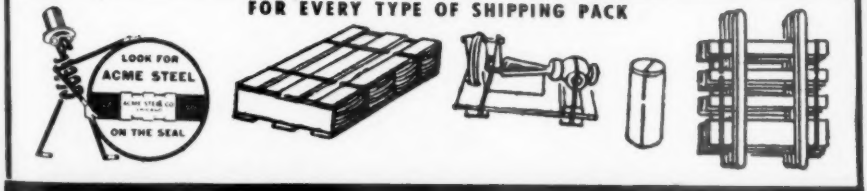
Mechanism is easily accessible.

SIMPLE IN DESIGN

Acme Silverstitchers are made in standard and several special sizes and types. Have few moving parts, are easy to operate—are sturdily built—and are low in cost. There is an Acme Silverstitcher to meet every stitching requirement.

ACME SILVERSTITCH FOR BETTER AND FASTER STITCHING

Acme Silverstitch Stapling Wire and Silverstitchers are built to function together . . . to assure stitching satisfaction year after year. Acme Silverstitch is true to size and temper . . . provides strong stitches . . . and is rust-resisting. Coils are furnished in 5- and 10-lb. sizes for all types of equipment. Mail the coupon for all the facts on faster and better carton stitching.



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In time of war and in time of peace . . .

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reflect sound engineering and modern manufacturing methods . .

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(NON-INFLAMMABLE LIQUID FILLED)

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T43-3A

Wagner Electric Corporation
ESTABLISHED 1891
6400 Plymouth Avenue, St. Louis, Mo., U. S. A.
ELECTRICAL AND AUTOMOTIVE PRODUCTS

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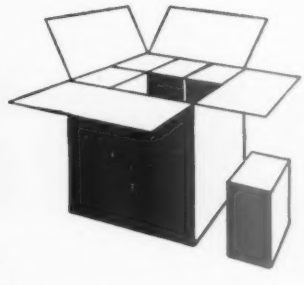
THE ultimatum of war that has touched even the ladies' "Packaging" is *Economize and Convert.* Where critical metals have been used, it's simply *Convert*—to paperboard, usually.

There *is* paperboard for important packaging jobs—and there is *no restriction whatever* on paperboard packaging *ideas.*

We at Container Corporation would like to help you convert to paperboard. Our whole history is successful package conversion—the development of new cartons and shipping cases, new linings, finishes and coatings that are more economical, more protective, more convenient.

The idea—and the package—for your product can be developed by our staff. Call or write for a consultation.



CONTAINER CORPORATION OF AMERICA

General Offices: 111 W. Washington St., Chicago • New York • Rochester • Natick, Mass. • Philadelphia
Akron • Cincinnati • Cleveland • Circleville • Detroit • Indianapolis • Wabash • Carthage • Anderson, Ind.
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EVERYTHING PAPERBOARD FOR EVERYTHING PACKED

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Conserve steel by making every piece of equipment last longer. Steady production by keeping your machines in uninterrupted operation. Since the operation of your machines depends upon wire rope, make sure your operators keep these commandments:—

1. Inspect, clean and lubricate all wire rope regularly. Tighten fittings.
2. Be sure the rope is the proper one for the service. Ask your Hazard wire rope man.
3. If drums or sheaves are small, or the kinking tendency pronounced, specify LAY-SET Preformed, the rope that resists bending fatigue and kinking.
4. Check your sheave or drum grooves. Worn grooves play havoc with wire rope.
5. Don't let rope rub against any standing part.
6. If the rope deviates from the center plane of the sheave more than 1½ degrees, undue wear will result.
7. Keep sheaves aligned and bearings tight and properly lubricated.
8. Don't allow bad spooling on drums. Hazard LAY-SET Preformed spools evenly under most conditions.
9. Don't jam on power or brake. Jerky operation accelerates rope failure.
10. Don't let a load spin and twist the rope.

Get the experienced recommendations of a Hazard wire rope man. Specify Hazard LAY-SET Preformed for a rope that resists bending fatigue, kinking and snarling. Use LAY-SET because it spools better, is faster and safer to handle, lasts longer.

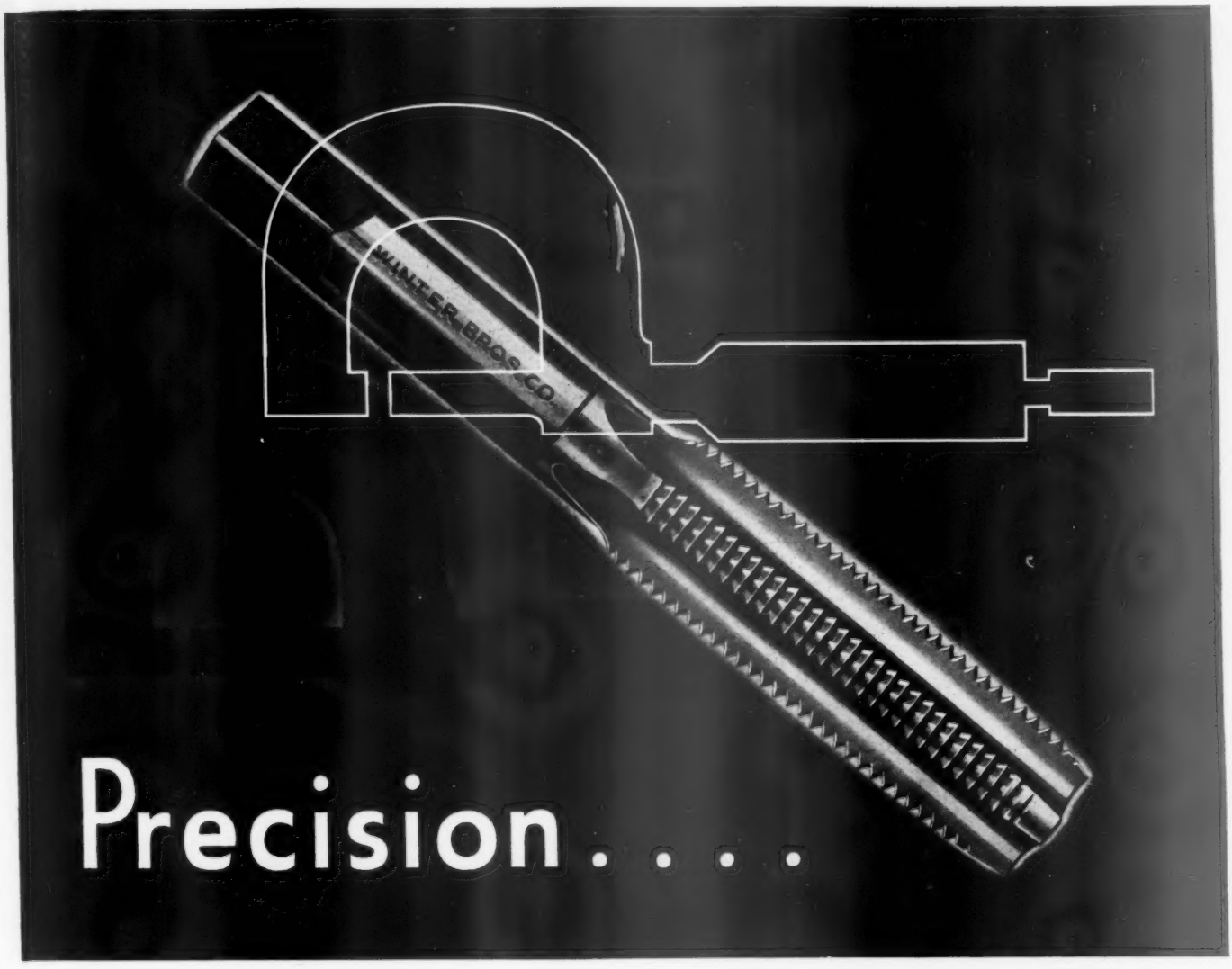
Keep equipment in good condition. Make it last longer.

HAZARD WIRE ROPE DIVISION
Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Fort Worth, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Tacoma

AMERICAN CHAIN & CABLE COMPANY, INC.
BRIDGEPORT, CONNECTICUT

HAZARD LAY-SET Preformed WIRE ROPE

When writing Hazard Wire Rope Division please mention Purchasing



Winter taps are precision-made to produce accurately threaded parts for quick assembly — handle them with care! They will take plenty of punishment on the job; but no tap will stand being thrown down on a bench, or into a box with other tools, without chipping off teeth or dulling the cutting edges.

Use taps as you would a micrometer — with reasonably gentle care, that their usefulness be prolonged to the limit.

A Division of
The National Twist Drill & Tool Co.
Detroit, Mich.

Winter Brothers
COMPANY
Wrentham, Massachusetts, U. S. A.

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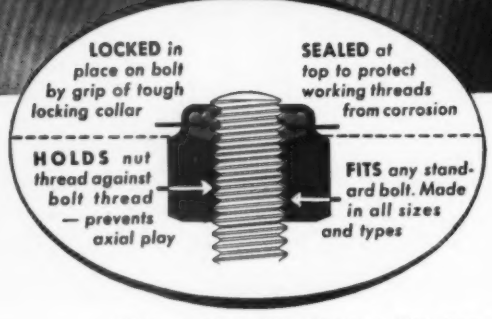
TOUGH NUTS TO CRACK


LOCKED in place on bolt by grip of tough locking collar
SEALED at top to protect working threads from corrosion
HOLDS nut thread against bolt thread — prevents axial play
FITS any standard bolt. Made in all sizes and types

● We've made billions of Elastic Stop Nuts.

And to our knowledge not one has failed to do its job.

But the tough nuts we refer to now are the fastening problems which looked hopeless until Elastic Stop Nuts were used.

We've met lots of these in our day — and licked them.

There have been plenty of them in war production.

And how well these fastenings have filled the bill can best be told this way:

Every nut we can possibly produce is going into war goods. Yet even doubling our round-the-clock plant capacity hasn't let us gain on the demand.

In the days to come there will be many peacetime needs for these nuts.

Some will be simple. Others will look like "tough nuts to crack."

Our engineers like to meet both kinds. They stand ready to share their experience with you, work on your fastening problem and recommend the proper Elastic Stop Nut application for the job.

ELASTIC STOP NUTS

Lock fast to make things last

ESNA TRADE MARK

ELASTIC STOP NUT CORPORATION OF AMERICA
UNION, NEW JERSEY

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ACHIEVEMENT THROUGH CHEMISTRY

Through *Chemistry*, NASHUA has established itself as a leader in the field of developing papers for special uses that are essential to our modern way of life. As an organization engaged for nearly 100 years in converting paper to greater usefulness and broader service, NASHUA has pioneered in the development of decorative, waxed, waterproof, gummed and protective papers. NASHUA'S application of *Chemistry* has given paper the capacity to serve better than many other substances and to replace materials so costly as to be economically impractical.

NASHUA appreciates the wide scope of possibilities for the further advancement of paper. Its laboratories are continually working on developments for post-war industry.

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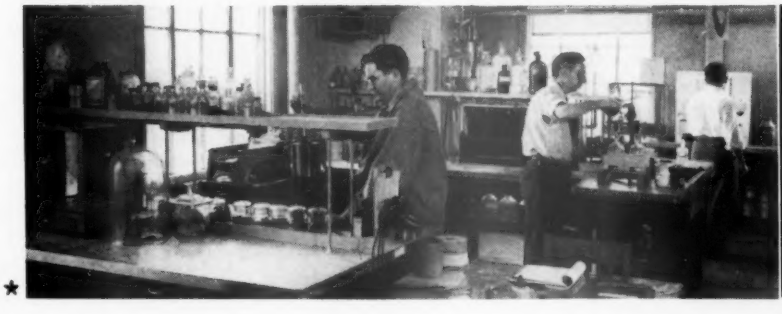

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MAKES PAPER MAKE MONEY FOR YOU

★ BUY MORE WAR BONDS ★

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WOMEN DRIVERS BREAK SPEED RECORDS

. . . when they drive AMERICAN Phillips Screws

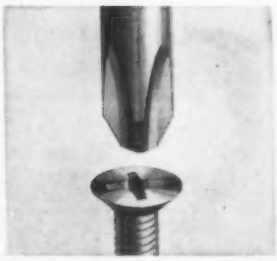
Inspectors hand out no rejection slips on work assembled with American Phillips Screws. These are the screw fastenings that drive straight, keep their heads, and keep the driver from skidding out to spoil work and slash hands. The firm fit between screw and bit permits the use of electric and pneumatic drivers, yet only one hand is needed to drive, so the other can brace the work. Screw sets up uniformly tighter, holds better. Head is unmarred, plumb-level on work surface. This unmatched speed and ease of driving keeps production at maximum levels to the end of the shift . . . enables women to do better work, *and far more of it*, than men could do with slotted-head screws.

American's engineering service, production control, and piece-inspection is so effectively co-ordinated that today scores of plants in every war industry are using millions of standard and special American Phillips Screws.

AMERICAN SCREW COMPANY

PROVIDENCE, RHODE ISLAND

Chicago: 589 E. Illinois Street *Detroit:* 5-267 General Motors Bldg.



The American Phillips Recess Was Scientifically Engineered . . . The Modern Key To Highest Fastening Speed And Greatest Economy in War-Production Assemblies.

Fast Starting—Driver point automatically centers in the recess . . . fits snugly. Screw and driver "become one unit." Fumbling, wobbly starts are eliminated.

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Better Fastenings—Screws are set up uniformly tight, without burring or breaking heads. A stronger, neater job results and there are no gouges on work-surface.

FOR REDUCED FRICTION, EXCELLENT SHAFT CONFORMITY, AND QUALITIES OF SELF-LUBRICATION, SELECT...

BUCKEYE *Lubrico* BEARINGS

...The exceptional quality high lead bearing that resists pounding and heavy shock, yet costs but little more than standard analysis bearings

For precision airplane parts, pumps, seal rings, high speed shafts and other services where freedom from shaft scoring and seizure —and long trouble-free operation are desired, specify "Buckeye Lubrico."

Manufactured from selected metals under Buckeye's exacting laboratory and metallurgical control assures the production of sound homogeneous bearings having a thorough and uniform dispersement of lead throughout. These bearings are free from porosity and are accurately dimensioned within the required limits assuring speedy, easy assembly.

Buckeye Lubrico Bearings can be furnished in any of our 1088 standard stock sizes—in 13″ cored or solid bars—or in any OD, ID and length, slotted, drilled, flanged or threaded exactly to customer's blue-print ... in three different metal analyses to meet exactly the requirements of light high speed, general, and extremely heavy duty service. No order is too big or too small for Buckeye. Let us quote on your requirements.

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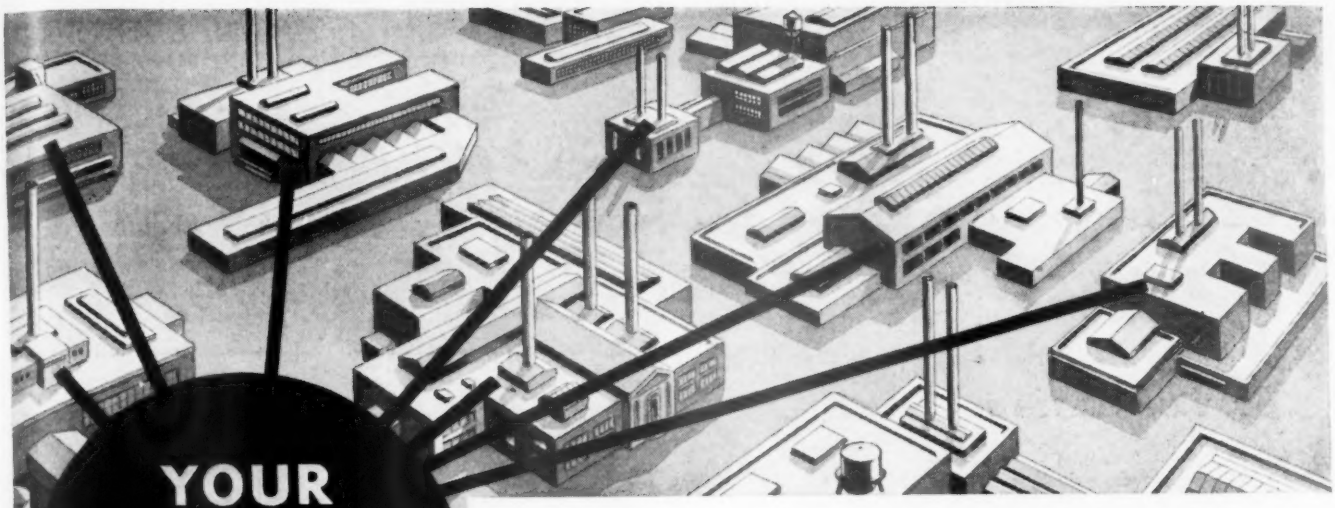
Another new plastic—we've given it a number instead of a name—from the test-tubes of General Electric chemists at One Plastics Avenue!

Developed to answer military demands for a new material with certain specified properties, it marks a further accomplishment in the widespread application of plastics to improve combat weapons and better industrial equipment.

General Electric is constantly creating new plastics, and refining old ones, to satisfy urgent military needs. This job is gaining for us the knowledge and technique to create even more versatile plastic materials for the world of tomorrow. These will provide new products, striking in design, and low in cost.

For complete information about plastics, write Section C-4, General Electric Company, One Plastics Avenue, Pittsfield, Mass.

PLASTICS DEPARTMENT
GENERAL ELECTRIC
PD-4



"Next Door" to Guaranteed Delivery When you order through your

I. S. D.*

Nobody can guarantee spot deliveries, of course. But your *Industrial Supply Distributor does the next best thing—he *anticipates* for you by ordering what you will need, ahead of the time you are going to need it.

He buys from many sources of supply, absorbing a lot of delays enroute and saving you clerical time and paper work. He buys on high priority as a rule. He buys for stock. That's why he can often say "Yes, sir—this afternoon, *sure!*"

Telephone your Industrial Supply Distributor INSTEAD of ordering materials or parts from the factory. You'll frequently find that this saves time for yourself—and avoids duplication and confusion—perhaps the very materials you need so urgently already are on the way to him on an order he placed weeks or even months ahead.

And you can buy from him with confidence always—we have been selling to him with confidence for many years. Try him FIRST for your needs in Cle-Forge High Speed Drills, Peerless High Speed Reamers, and other cutting tools we make.

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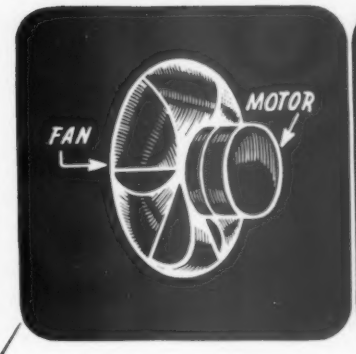
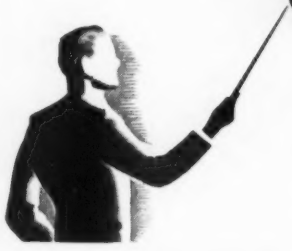
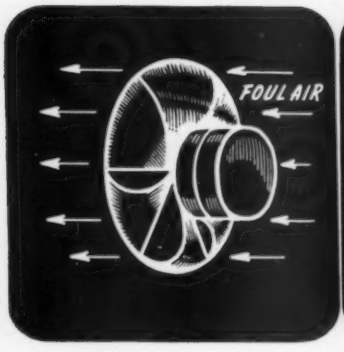
THE *Inside Story* OF VENTILATING FANS

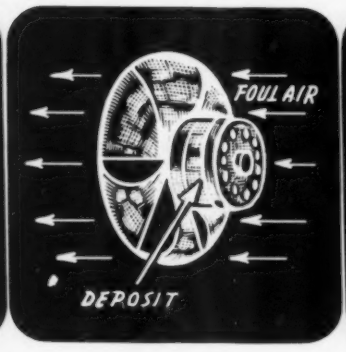


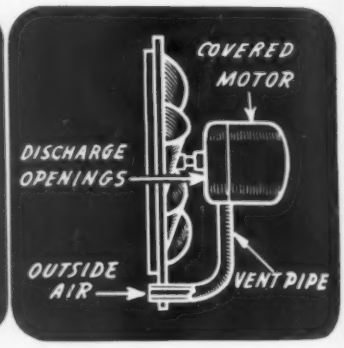


1 Propeller fan, in simplest terms, consists of motor and fan wheel. Low cost (no ducts), effective method of exhausting bad air, heat, steam, dust, vapors.

2 Direct connection of motor and wheel avoids noisy operation, misalignment, wasteful friction losses usually present when belts, gears, pulleys, or couplings are used.







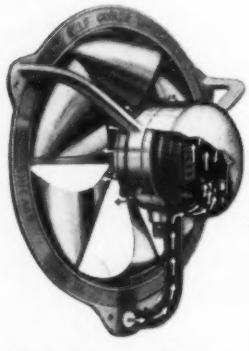
3 Motor comes into contact with impurities being exhausted. Grease, dust, steam, moisture, smoke, gases, or fumes in exhaust air deposit on motor.

4 If motor is *open,* deposits "gum-up" operation, interrupt service, shorten its life. If motor is *enclosed,* deposits form a blanket of insulation . . . motor "runs hot."

5 Recognizing this situation . . . Ilg did something about it . . . 35 years ago! As first step, Ilg built its own motor, specially designed for fan operation . . . then *covered* it.

6 Vent pipe attached to motor cover has entrance to vent OUTSIDE of building, OUTSIDE of exhaust air stream. Air forced through fan blades creates suction at openings in FRONT of motor.

7 Suction at front motor openings draws air up through vent pipe, where it is circulated around motor, then is exhausted into air stream. Motor stays clean, cools itself!



Recognizing conditions under which exhaust fans operate, Ilg Self-Cooled Motor Propeller Fans have been engineered and constructed to operate at *peak efficiency* under those conditions! Place this "Inside Story" in your files . . . call upon Ilg to help you solve your next ventilating fan problem!

ILG

VITALIZED VENTILATION

AND AIR CONDITIONING

AIR CHANGE . . . NOT JUST AIR MOVEMENT!

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2846 NORTH CRAWFORD AVE., CHICAGO, ILLINOIS
OFFICES IN 39 PRINCIPAL CITIES

☐ Please send copy Ilg Condensed Catalog No. 542

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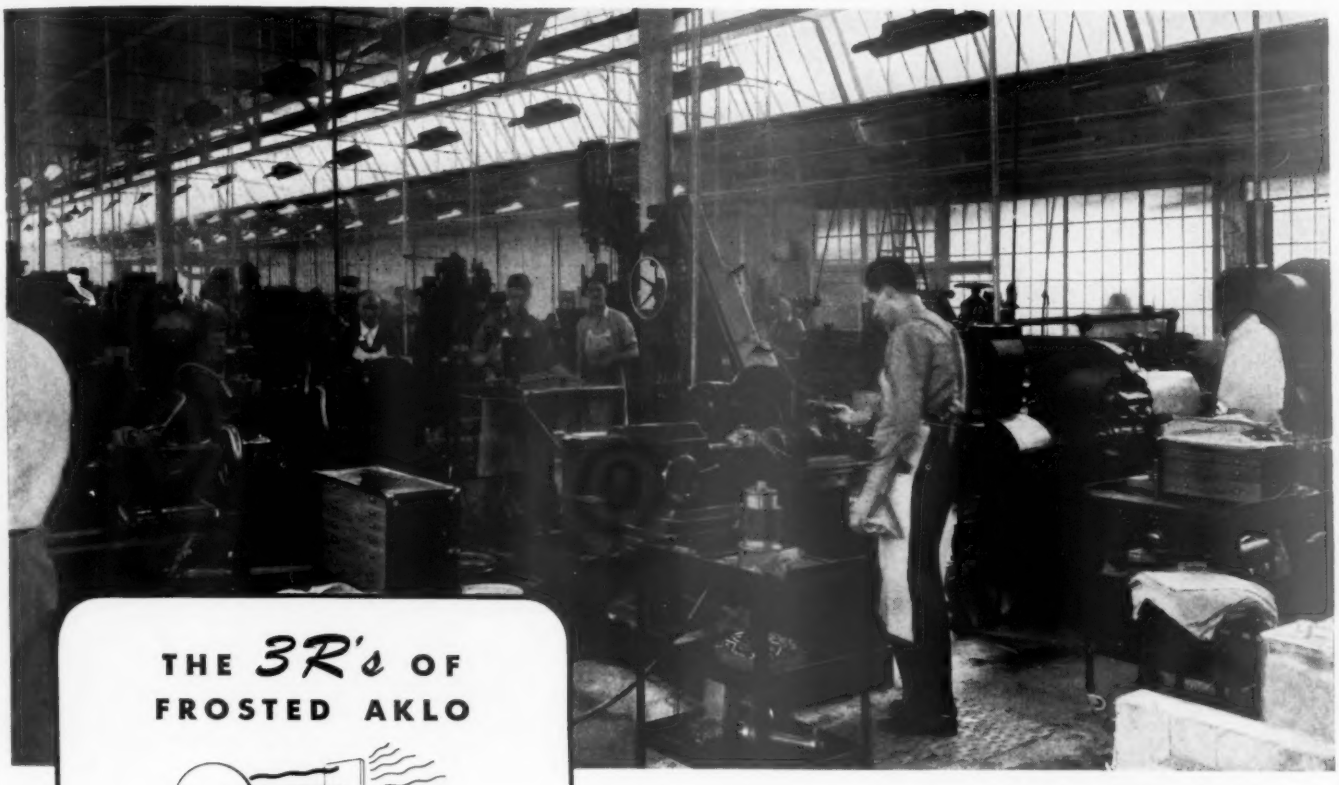
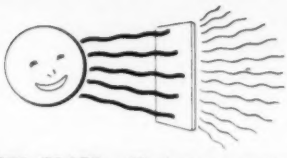
PRECISION PARTS MAKER TURNS TO BLUE RIDGE FROSTED AKLO GLASS

..."Employees work directly in front of windows without slightest glare or discomfort"



THE 3R's OF FROSTED AKLO



REDUCES GLARE—Eliminates eyestrain and employee fatigue.

RETARDS SUN HEAT—Keeps workers comfortable on their jobs.

RENDERS SAVINGS—Eliminates shades or painting of glass.

ELIMINATES COSTLY SHADES, KEEPS INTERIORS COOLER

Where maximum production and top quality must be obtained, there is no substitute for Blue Ridge Frosted Aklo Glass in factory windows. It reduces eyestrain by softly diffusing incoming natural light. It absorbs approximately 97½% of the sun's infrared heat rays. It eliminates costly shades, awnings or regular painting of ordinary glass. It helps employees do more and better work, and contributes to lowered operating costs in air-conditioned areas—a doubly important factor when precision work must be held to rigidly close tolerances.

Aklo—a product of the Blue Ridge Glass Corporation of Kingsport, Tenn., is sold by Libbey·Owens·Ford through leading glass distributors. Aklo is available in hammered and ribbed patterns, both wired and unwired. For complete information, write Blue Ridge Sales Division, Room 543, Libbey·Owens·Ford Glass Company, Nicholas Building, Toledo, Ohio.

L O F

BLUE RIDGE AKLO GLASS

Heat-Absorbing · Glare-Reducing · Figured and Wire Glass

BLUE RIDGE GLASS CORP. MANUFACTURERS OF QUALITY GLASS KINGSPORT · TENN.

U. S. NAVY OFFICIAL PHOTO

New! PEBBLE-TEX

Affords Protection to Metal Surfaces of Important War Products. . . Such as radio sets, instrument panels, fire control and listening devices, etc., requiring a rough finish. Also recommended to manufacturers of essential civilian articles who can furnish high priority and allowable end-use. PEBBLE-TEX offers you these outstanding advantages:

1. **Air-drying at 20 minutes. Saves time, manpower and oven space.**
2. **Simple to apply with pressure type spray gun. Varying degrees of texture obtainable from same mix by gun adjustment.**
3. **PEBBLE-TEX pattern in one coat. For full metal protection use over a primer.**
4. **Comes in a variety of colors.**

Investigate PEBBLE-TEX. Trial order at drum price. Write to Dept. P

Here are shown actual photographs (unretouched) of panels finished with PEBBLE-TEX. Above shows coarse texture.

This panel shows a finer texture. The size of the pattern is regulated by spray gun adjustment and application technique.

THE EGYPTIAN LACQUER MANUFACTURING CO.
ROCKEFELLER CENTER—NEW YORK, N. Y.

EGYPTIAN
Superior FINISHES

When writing The Egyptian Lacquer Manufacturing Co. please mention Purchasing

a Jap's-eye-view of a

WAR WEAPON

SAVE CRITICAL MATERIALS in selection, application and use of electrical equipment.

USE NEWLY DEVELOPED METHODS to speed vital war production.

KEEP EQUIPMENT RUNNING by proper Maintenance and Repair Service.

REPLACE CRITICAL MATERIALS with Micarta and Prestite.

SAVE SCRAP by systematic planning and salvage.

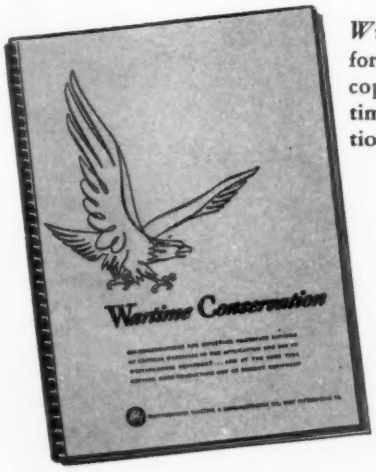
When "sunken" ships come sailing back and "crashed" planes deliver another stick of bombs, the Japs must look with awe on the "weapon" that gives these damaged ships new life. This "weapon" is electric welding. By speeding fabrication and repair, this amazing process is speeding Victory.

There still remain, however, many places on the production front where the latest welding techniques are not being used to full advantage. Westinghouse suggests that you investigate them immediately.

One new process stitches steel together automatically 20 times faster than any other method. Another type of unit requires 30% less critical materials to build, eliminates troublesome arc-blow.

These and other methods of speeding war production and saving critical materials are suggested in the new 100-page book, "Wartime Conservation." Write for your free copy today. Address nearest office or Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

J-21268



Write today **for your free copy of WartimeConservation, B-3206.**

WESTINGHOUSE

Westinghouse

PLANTS IN 25 CITIES ... OFFICES EVERYWHERE

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An Actual Example of the Time-Saving Gains of the Graybar MM Plan*

As the engineering department for an important war project became more and more overworked, it found it necessary to "pass the buck" to the purchasing staff. Blueprints were approved without drawing off a list of materials, and the purchasing department was told to "get us what the prints require".

Soon, the purchasing department had its own manpower crisis. Delays in ordering arose which threatened a construction slowdown.

At this point, the GRAYBAR Man come into the picture. By offering to draw up the list of electrical requirements right off the prints, he opened up a way to relieve the pressure. Typed on a requisition pad, the list was quickly reviewed by the buyer and the purchase order issued with virtually no change.

The electrical supplies reached the job on time. Record-keeping and billing were simplified by a single order to a "one-call" source.

***Serving as your MATERIALS MOBILIZER**

. . . on electrical supplies, GRAYBAR makes its procurement experience a part of your war production facilities. In less than one hour, your GRAYBAR Procurement Adviser can review the *four-point plan* which "dovetails" your electrical needs with the available production of more than 200 electrical manufacturers, distributed locally from more than 80 warehouses. Why not call your local GRAYBAR office about it today?

Executive Offices:
GRAYBAR BUILDING
New York, N. Y.

GraybaR

IN OVER 80 PRINCIPAL CITIES

Everything Electrical . . . . THAT IT TAKES TO WIN!

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PURCHASING

APRIL, 1943 . . . . . CONTENTS

Published monthly by

CONOVER-MAST COMPANY
Publication Office: Orange, Conn.

Editorial and Executive Offices:
205 East 42nd Street, New York, N. Y.

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PURCHASING is an independent journal not the official organ of any association. It is the only publication of national scope devoted exclusively to the interests and problems of the purchasing executive in industry and government. Established 1915 as "The Purchasing Agent." Consolidated with "The Executive Purchaser."

VOLUME XIV, NUMBER 4, 35c per copy, $3.00 per year. Extra postage for Canadian and foreign subscriptions $1.00 a year. Contents are indexed weekly and annually by the Engineering Index Service.

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THE END
and
THE MEANS

THE recent change in the administration of price control and rationing throws into sharp relief both the strength and the weaknesses of the Henderson regime. By and large, the public—including the business and industrial community—respected the singleness of purpose with which the battle against inflation was waged. Mr. Henderson commanded public cooperation and support where he least courted it. The army of volunteer workers in every city and town, accepting their call to duty in undertaking the unpopular jobs of registration and rationing among their own neighbors, is one of the most eloquent expressions of our entire war effort. It was inevitable that Mr. Henderson's appointments, made without fear or favor, should bring political recrimination, but they won for him the backing of the nation.

Unfortunately, along with this resolute and unflinching purpose, there was a curious disregard of the very public on whom the whole success of the program ultimately depends. OPA has been by turns domineering, puerile, scornful, rarely open to suggestion or taking the nation into its confidence, slow to acknowledge and correct errors, bureaucratic in the worst sense of the word. In this respect, it is widely felt that Mr. Henderson has underrated the morale, the patriotism, of Americans. To put it very mildly, the public relations were very bad.

Mr. Brown has taken the first step toward remedying that deficiency by the appointment of a competent and successful advertising man to "sell the program to the nation." It is well to point out at the outset that the first requirement in any selling campaign is a meritorious product. In these days, the nation does not need to be sold on the necessity of economic controls. It does need to be sold on the manner in which these controls are exercised. It will react favorably to a record of results in which the people themselves have had a part. It can not be sold at all on a policy of appeasement—in political patronage, special interests, or even catering to popularity. Appeasement is one policy which Mr. Henderson never used. If it results now in a weakening of effectiveness in meeting the main issue, there will be nothing left to sell.

Stuart F. Heinritz

Reporting on Current Steel Stocks

As you may know, the steel warehouse industry entered the war period with large and complete stocks. These reserve stocks of steel enabled industry to switch over quickly from peace to war production. However, in the process, stocks of steel in the warehouses of the country became seriously depleted. In fact, these great sources of emergency steel became almost non-existent.

No matter how carefully plants are maintained and production programs scheduled, there are always times, particularly under our heavy war load, that certain lots of steel must be secured immediately or production is imperiled. So companies working at top speed and embarrassed by their inability to secure steel quickly from warehouses, began reporting their problems. The War Production Board was quick to grasp the situation and assign special allotments to the warehouses. A bad situation is now gradually being improved and we are glad to report that our stocks are somewhat better assorted.

In order to eliminate the time required for many roll changes and so to permit increased overall production of steel, we are concentrating on the most generally used sizes. In spite of this curtailment of our usually very broad range of sizes we are now better able to serve than at any time in recent months.

When you need steel or have a problem of selection or fabrication, get in touch with your nearest Ryerson Steel-Service Plant. Our engineers and metallurgists will be glad to work with you. Joseph T. Ryerson & Son, Inc., Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.

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What this War is doing to Purchasing

IT IS pretty generally accepted that the modern concept of purchasing dates very definitely from industrial experience during World War I. Since every sale is also a purchase, depending on the side from which the transaction is viewed, there had been purchasing of a sort as long as there had been any business. But it was in the crucible of a war emergency that buying was transmuted from the status of trading to a business science.

There is much external evidence in support of this statement. The founding of the professional association of purchasing men, recognizing a community of interests and problems and objectives, the earliest literature of buying, the development of specific vocational and educational facilities devoted to procurement principles and procedures—all date from that critical period of 1915-1916. The great progress of the past quarter century had been based on these beginnings.

★ ★ ★ ★ **By STUART F. HEINRITZ** ★ ★ ★ ★

Equally important — for it has given scope and authority to the developments within purchasing itself —is the fact that management, through the same war and post-war experience, came to the realization that its procurement program had a distinct and vital functional role in the management plan, attainable only when the purchasing department was established as a positive and responsible executive branch rather than as a passive service division. That realization, too, has been strengthened and given practical expression in the intervening years.

Turning Points in Purchasing

This does not imply that all purchasing men suddenly became high-powered executives overnight, or that all management was immediately converted to the enlightened new order in respect to purchasing. As a matter of fact, there is considerable room for improvement even now, on both counts. But that World War period did mark a point of transition, the emergence of new trends of thinking, and the establishment of solid foundations upon which industry has built a new philosophy and science and plan of procurement—to its own very great advantage.

Most of the leaders in purchasing today either went through that period of wartime change themselves, or have entered the field during the ensuing period when this new order was taken for granted, unquestioningly accepted among purchasing men and steadily gaining ground in management circles. They have watched the principles of scientific purchasing ever more clearly emerging, developing new and constantly higher standards of performance, efficiency, and control. They have seen these principles successfully meeting the changing problems of World War I economy, the post-war readjustment, the booming activity of the '20s, the difficult years of a world-wide depression, and the feverish transition to a total war effort that completely dwarfs the earlier emergency by comparison.

Drawing a Parallel

The natural reaction of such men to the present situation is to draw a parallel between the two war eras—the one in which we learned our lessons and the one in which we have an opportunity to apply them anew—and to accept the present one as differing only in degree. In the first World War we had expansion of facilities and output, conversion to the manufacture of war products, shortages of materials and manpower, selective service decimating the ranks of personnel on the home front, the problems of expediting and priorities, the fight against inflation, as well as the actual experience of dangers to be encountered in the subsequent return to peace-time activities. Today, of course, every one of those factors is magnified many times. We have far greater destruction, larger armies, more complete mechanization, bigger units, greater volume, more desperate urgency. Therefore, the reasoning goes, if there was a need for skillful procurement and the opportunity for demonstrating its value in the first instance, the purchasing function and its practitioners stand in an even more strategic position and at the threshold of an even larger opportunity today.

Career men in purchasing today are helping shape the course of their profession

Get the Whole Picture

Basically, that reasoning is utterly sound—so far as it goes. But it is not quite as simple as suggested in this outline form. For this appraisal overlooks two important factors that were just as much a part of that earlier crisis as was the scientific approach to purchasing itself. If purchasing is to meet the challenge of the present emergency with maximum effectiveness and to capitalize the opportunities which are indubitably here for purchasing men today, we must view the picture in its entirety.

The first of these factors is that the war marked a period of fundamental change. It was not only a test of industrial and purchasing organization; it was a formative influence. The post-war world was a far different place in which to work than the pre-war world. It was not merely a case of belated application of purchasing principles to a given situation; it was the development of principles and techniques to meet a new set of circumstances. Those circumstances have continued to change. They never returned to the pre-war status; those days were gone forever.

Some of the new conditions were the general acceptance of mass-production assembly-line methods in virtually all manufacturing and processing operations; narrowing unit-profit margins that put a premium on lower costs of materials and operations alike; a new type of craftsmanship based on strict control of quality in materials and on precision equipment; ever increasing mechanization; standardization; more intensive competition, with new producing units in the field; a new impetus for technological improvements. In the overall view of our national life, socially as well as commercially, the keynote was wide-open competition and unlimited opportunity.

The Scientific Approach

In the conduct of an industrial function as well as in the performance of an industrial operation, scientific precision and efficiency were added to the old personal art or craftsmanship—a sort of mechanization of executive management parelleling the mechanization of the production line. The science of business administration, now taught as a matter of course in the universities which fit each succeeding generation to take its part in the business world, would have been impossible without this basic change of attitude. At the same time, the codification and teaching of administrative principles has helped to form and to intensify such thinking, to a very great degree. The fact that purchasing became a science was no isolated phenomenon; the same sort of development can be found in the fields of marketing, production, accounting, and the many other specialized functions that go to make up the complete industrial process. Purchasing, for all its rapid progress in this quarter century, more rapid perhaps because it is among the more recent industrial sciences, has actually been keeping step with a general trend.

This element of change is a part of the parallel. The present war also marks a turning point, a period of change. The external evidences are to be found in the

unprecedented scope of governmental controls — wartime emergency measures for the most part, yet having their roots in earlier legislation affecting labor and distribution, and portending an entirely new approach to the whole philosophy of profit incentives, social and international responsibilities. Management has already felt the effects of this change. It cannot be doubted for a moment that the impact will be felt in specialized functions such as purchasing, as well, and will have a profound influence on future practice.

Recognition Must be Earned

The second factor, which has already been mentioned in connection with the earlier development, is the attitude of management toward the purchasing function. This is something that purchasing must earn, and then sell to its company. In World War I and in the intervening years, a favorable attitude—usually expressed as "recognition"—was earned by accomplishment in the development of controls in the realm of quality standards and their definition, inventory turnover, cost analysis, market studies, competitive buying, timing, calculation of ultimate values, development of supply sources and sound business relations. These activities are of a type that is positive and demonstrable, where science and initiative pay large dividends, as contracted with routine, unimaginative and clerical performance. They are expressed in the language which executive management understands and appreciates.

The Rules Have Changed

In the wartime economy under which we are now operating, the rules have been changed. They are expressed largely in terms of limitations imposed from the outside and from a higher authority. As to procurement, industry is told what materials it may secure, in what quantity, and within what price range, how large an inventory may be maintained, for what purposes they may be used, and to whom the product may be sent. The whole character of product and market has been completely changed or "converted" in many industries. The license and method for procurement is rigidly established by governmental order. Enterprise is circumscribed by the measure of essentiality. Competitive skills and advantages are equalized by subsidy, by relaxation of patent protection, and other means. And the full effect of governmental powers has not yet been exercised.

Superficially appraising this condition, management may be pardoned for arriving at the conclusion that procurement—though indubitably more important than ever before—may have become a somewhat mechanical procedure rather than a function calling for a high degree of executive vision and skill. Under the multiplicity of controls and regulations, what is the role of science and initiative today? Have the art and science of purchasing in fact become obsolete? If that viewpoint prevails, and unless purchasing men find the answers and can demonstrate the larger truth, the hard-won progress of twenty-five years can be utterly wiped out. That would be unfortunate for purchasing men; it would be even more calamitous for industry. Yet the questions are being seriously pondered by purchasing and management executives alike.

20,000 New Purchasing Men

The experienced purchasing officer has the advantage of knowledge and perspective. He has the disadvantage of fixed habits of thought in respect to his responsibility and reliance on his accepted concept of the procurement function. Let us overcome these disadvantages and dramatize the present by adopting a new viewpoint.

By the most conservative estimate, some 20,000 new men and women have come into purchasing work during the past two years. They have provided the personnel to replace seasoned buyers who have been called elsewhere in the war effort—into the armed forces, the governmental service, or other industrial duties; to carry on the tremendously expanded work of existing purchasing departments which have, in many cases, doubled or tripled in size to cope with a greater volume of buying as well as new responsibilities of expediting, record keeping, and handling priorities and the like; to staff governmental procurement agencies in the greatest purchasing project of all time; and to serve in buying for the many new plants which have been built to implement the war production program. Most of them have no purchasing background. Many of them are young in business, with no preconceived notions of the job, and many have been engaged in work which may have tended to give them a distorted or even antagonistic viewpoint toward the purchasing function. The one thing they have in common is that in entering the purchasing field, they must accept it as they see it today.

It has been one of the major responsibilities of purchasing executives during this period, to assimilate this new army of procurement personnel. By the sketchiest of training methods, by accelerated courses which have sprung up in many industrial centers, frequently under the sponsorship of the government, and even more by actual experience on the job itself, they have been hurriedly exposed to the fundamentals of buying principles and procedures, and have plunged into the whirl of procurement. By and large, they have done a magnificent job in the exceedingly difficult assignment of being placed in the position of a man who would normally have years of guidance and graduated experience in buying before coming into such responsibilities.

An Objective Viewpoint

At the same time, it may be a helpful and enlightening experience for the purchasing officer to try and place himself briefly in the position of these newcomers who are entering the purchasing field in these new days even as he entered it in an earlier era and accept it as they find it, who approach the task of procurement with a fresh viewpoint, without the experience that is one of his own greatest assets, to be sure, but also without the traditions and perhaps the prejudices that may cloud his view of present conditions. What do they see? Here are a few of their uninhibited observations:

1. They see that materials are today the key to the whole operating program; procurement is the first step in production. That has been argued at length over

We are meeting a change in the emphasis, not the importance, of buying principles

the years, but it is not even debatable today. Purchasing is not merely a service function implementing a manufacturing program based on sales forecasts or a predetermined maintenance policy; its success in procurement is the determining factor as to what the company can do, how fast and how far it can go in the desired program.

2. They see the purchasing officer not only committing the company to certain financial obligations represented by the purchase orders and contracts, but with the additional responsibility of certifying that the company is entitled to receive the materials in question, for a specific purpose. In other words, it is his certification on the application and the order, properly supported by records, orders in hand with their rating of essentiality, and carefully calculated bills of materials, that may insure the allocation and delivery of the needed supplies and establish the company's right to continue in business. Conversely slipshod or inaccurate records, based on incomplete or unchecked requests for material, and leading to improper claims, may be fraught with hazards and penalties not measurable in dollars and cents alone.

3. Incidentally, they may or may not find the purchasing department organized and authorized to exercise these controls adequately, depending on whether the essential responsibility for the entire requisitioning process comes under the jurisdiction of the department.

4. Under the system of governmental controls established to channel the flow of materials, which the newcomers accept as part of the picture, they see the paper work of applications, extensions forecasts of requirements and reports of inventory, not as a headache but as the very tools of procurement. Complex and cumbersome they may be in detail, but they are based on national necessity, and represent the rules of the game under present conditions.

5. The prime essentials of effective purchasing are seen to be scheduling and materials control. No comfortable cushions of large inventory stocks, liberal timing, and margins for error, are available to give play to loose purchasing methods. And these controls, as suggested above must be under the supervision of the purchasing department to be carried through effectively.

6. There is no cushion of unlimited profit margins—the old theory of the open market, or whatever the traffic will bear. Costs are not a matter of purely internal concern to the company itself, but are subject to limitation, audit, review and adjustment by the No. 1 customer Uncle Sam. Thus the profit potential lies chiefly in the direction of efficient utilization and operation. This is emphasized by the recent appearance of a new type of contract with the highly descriptive title of "price minus"—a sort of profit sharing scheme between government agencies and their industrial suppliers whereby base profits on the contract price are fixed, but an incentive premium is offered by achieving lower costs and better performance.

7. Partly as a result of this, and partly because it is a real job to obtain materials from the limited supply available and earmarked for a given purpose, purchasing is deeply concerned with conservation in all its aspects—getting more product from less material, making supplies go farther and last longer, and returning waste promptly and completely and in useful form into the cycle of production. The less there is to buy, to that extent the purchasing burden is eased, for a particular production schedule.

8. All of these purchasing factors are found to be superimposed upon a relatively simple procedure, which in general outline is common to all buying operations, designed to procure "the right material, in the right quantity, at the right time from the right source, and at the right price."

How Long is the Duration?

Our newcomers in purchasing hear glib and patriotic talk to the effect that these things are with us "for the duration." Being without preconceived notions as to what might be considered normal in the buying process, they are privileged to ask two questions: The duration of what? And what happens after that?

No one can predict with any certainty the duration of the actual fighting in this war. Even at this date the speculations vary from months to years. But it is possible to say with great certainty that the duration of hostilities and the duration of this new order in purchasing and in industry are not one and the same. If there was any doubt that this is true, the President's message of March 11th should convince everyone that the end of the shooting will not mean the end of controls. Destruction has been at such a fearful rate, and the task of reconstruction already looms so large, that the role of materials and their allocation to essential purposes is bound to be a factor for years after the last gun has been fired. And before we can even undertake the job of reconstruction, there will be the problem of reconversion from making the materials of war to those of peace, with all its problems, equal in kind and in degree to the period we have just been passing through. Moreover, far-sighted industry is wholly agreed with government that we must guard against the perils of inflation and depression that beset us in the wake of our earlier conflict.

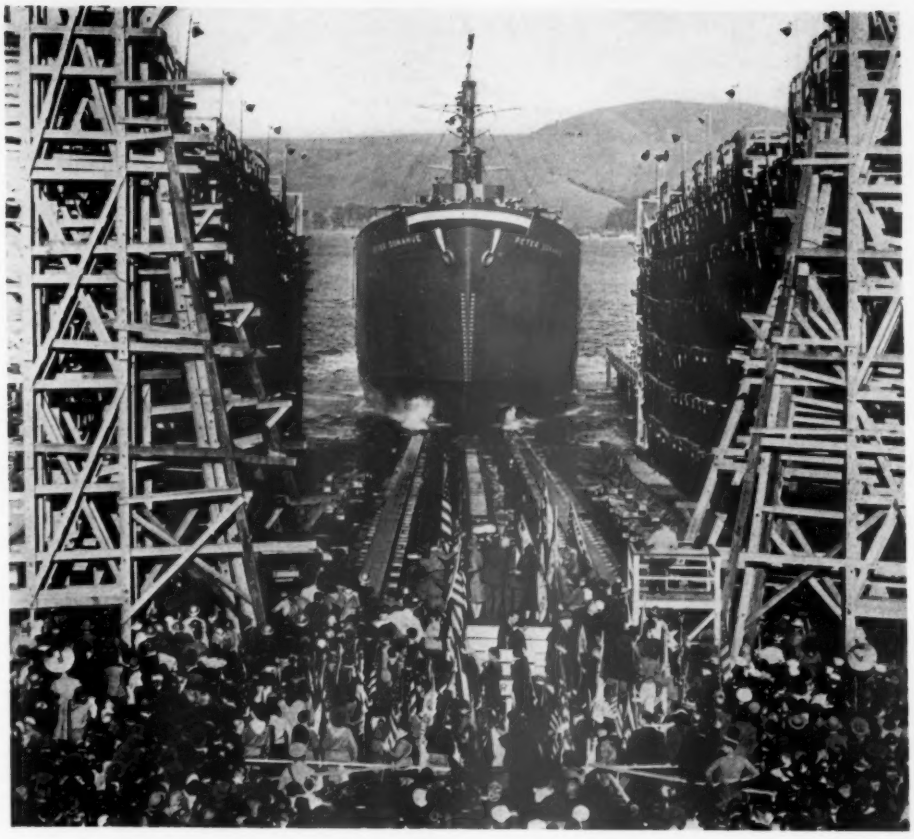
Going back again to the experience of the last war, in countries which operated then under controls somewhat comparable to those now in effect, it was a matter of years before allocations and price controls were relaxed, and in some cases they were never wholly removed. Even with the most optimistic forecast of complete victory in 1943, and with the possibility of tempering the bureaucratic excesses that we have permitted in our own political situation, the "duration" affecting materials and business procedures is more likely to be eight or ten years than three or four, and it may be, in basic pattern, a rather permanent state of affairs.

A Look into the Future

And after the duration, what? We are constantly reminded that it is folly to expect to go back to our pre-war status and pick up the threads of our old habits where we put them down in 1939. We are fighting to build a new world. We hope it will be a world in which private enterprise will still be the moving force, but it will inevitably be coupled with new social responsibilities in our own national life and on an international scale, and a new form of competition in which individual interest is subordinated to the general good. This will necessarily affect our ways of doing busiiness. We saw the beginnings of that in the legislation of the '30s, in the theory of parity prices, and in social security programs.

In respect to the individual companies, there is no assurance that they will necessarily convert back to their original line of manufacture. With soap and cereal manufacturers now engaged in making munitions, anything can happen. Particularly if markets change, it is altogether plausible that the reconversion to civilian

Continued on page 268



"PRICE-MINUS" CONTRACTS
SPEED SHIPBUILDING

A new form of Government contract provides incentives while it safeguards the public interest; efficiency benefits both parties

By R. EARLE ANDERSON

DIRECTOR OF FINANCE
UNITED STATES MARITIME COMMISSION

(Photos by U. S. Maritime Commission)

LONG before Pearl Harbor, in fact even before the German attack upon Poland, the United States Maritime Commission began to speed up its shipbuilding program. A basic project of fifty ships a year was doubled to a hundred a year. These ships were mainly of the Commission's standard C-1, C-2, and C-3 type and tankers, contracted for in the oldline shipyards, on competitive bids, with awards generally of from one to four ships to a shipyard, although in a few cases awards of more than four ships were made.

Then came the war in Europe, and soon under Presidential direction and special congressional action, this "retail" shipbuilding was expanded into the present gigantic program of wholesale ship production on a manufacturing basis.

The victory fleet of Liberty Ships had to be created; the standard C-types and tankers had to be put into quantity production; new shipyards had to be built, and new shipbuilding organizations created.

This sudden change in the shipbuilding industry, which took on momentum in the early months of 1941, brought with it many problems. Perhaps the most difficult were those growing out of the limited supply of shipbuilding "know-how", the very small number of competent executives, supervisors and artisans who had experience in an art which, until the advent of the Commission's program for rehabilitating the American Merchant Marine, had been for nearly a generation in the doldrums.

Almost overnight it was necessary to bring in talent from other fields; builders of almost everything but ships; to teach them shipbuilding, and to entrust to them, with such infiltration of old-time shipbuilders as could be accomplished without danger to the back-bone

of the industry, the great task of building ships by the thousand.

It was this situation, superimposed upon a labor and materials market that had become, concurrently, highly unstabilized, that led to the development by the Commission of its so-called "Price-Minus" type of contract, which in one form or another has now been in successful use for more than two years.

Special Contract Needed

The particular need for a special form of contract largely grew out of the conditions which have just been outlined. Contracts could no longer be awarded on the basis of competitive bids. There were too many unknowns to make the usual form of fixed price contract practicable, even with carefully devised escalator clauses. Private capital could not be asked to venture into the unknown upon such a gigantic scale and on undertakings that would last over many months. And if green organizations, created out of every conceivable category of business and mechanical activity, were to have to be relied upon, it was obvious that until the newly constituted shipbuilders could hit their stride, production would be at relatively high cost.

Some plan was necessary therefore that would recognize these facts and thus make it possible to utilize private capital and bank credit and justify the confidence of suppliers.

These conditions could be met with a cost-plus form of contract. But not only was the cost-plus-a-percentage-of-profit type banned by law (quite properly in view of the unhappy experience that had been had with it in World War I), but the Commission felt that even the cost-plus-fixed-fee contract, with no incentive to lower cost, would open the way to extravagance by contractors, who even with the best of intention would have no self-operating brake upon expenditures. The "Price-Minus" contract meets these conditions. It assures to the shipbuilder reimbursement for all his legitimate costs, and pays him a small minimum fee which is his in any case. But if his actual costs are kept within the estimates which the Commission, with its detailed experience and knowledge of what such costs should be, have set as a bogie, his fee is increased in proportion to the saving.

A Process of Negotiation

The contract sets a so-called "contract price" based upon the Commission's estimated cost with a normal profit added. In effect, the contractor and the government share any savings below this contract price, so that the economical contractor gets half the savings added to his minimum fee and the Commission gets the ship for the contract price minus half the savings—hence the term "price minus". It is the antithesis of "cost-plus."

Necessarily these price-minus contracts are made through negotiation. The minimum fee is fixed in dollars at an amount equal to 3% or less of the estimated cost, and a ceiling fee is also provided for at not more than 10%. Presently the tendency in contracting has been to set the fee limits at somewhat lower levels. Bonuses for early delivery and deductions for possible late delivery operate within these limitations, thus preserving to the contractor the full protection of the minimum fee and to the government that of the maximum or ceiling.

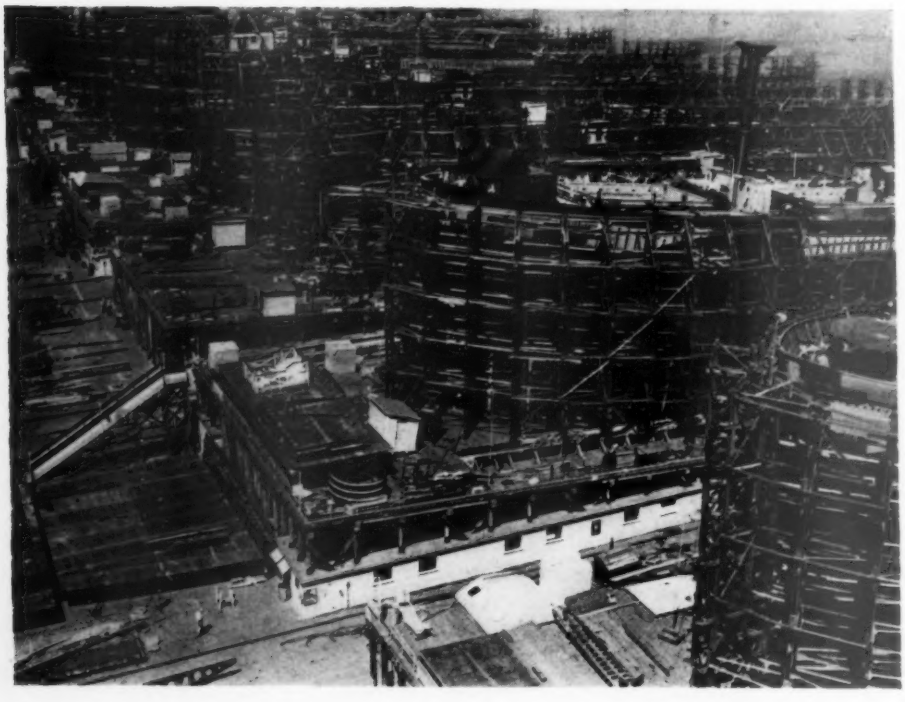
The way the price-minus contracts work out is as follows: Take, for example, a ship estimated to cost, for labor, material and overhead, say $1,000,000. The minimum fee might be set at $30,000 and the "contract price" at $1,100,000. If the vessel actually costs $1,000,000 to build, then the contractor would first be paid the $1,000,000 of cost plus the $30,000 fee. That is to say, the contractor would receive $1,030,000. He would then also be paid half the difference between the $1,030,000 and the $1,100,000. In other words, the contractor would receive a total fee of $65,000, which is six and one-half per cent of the estimated cost, but the vessel would cost the Government $35,000 less than the contract price.

If the contractor were to build the vessel for a cost of $950,000, he would receive that amount plus $30,000 or $980,000 and half of the difference between $980,000 and the contract price of $1,100,000. In that event the contractor's total fee would be $90,000 and the vessel would cost the Government $60,000 less than the contract price.

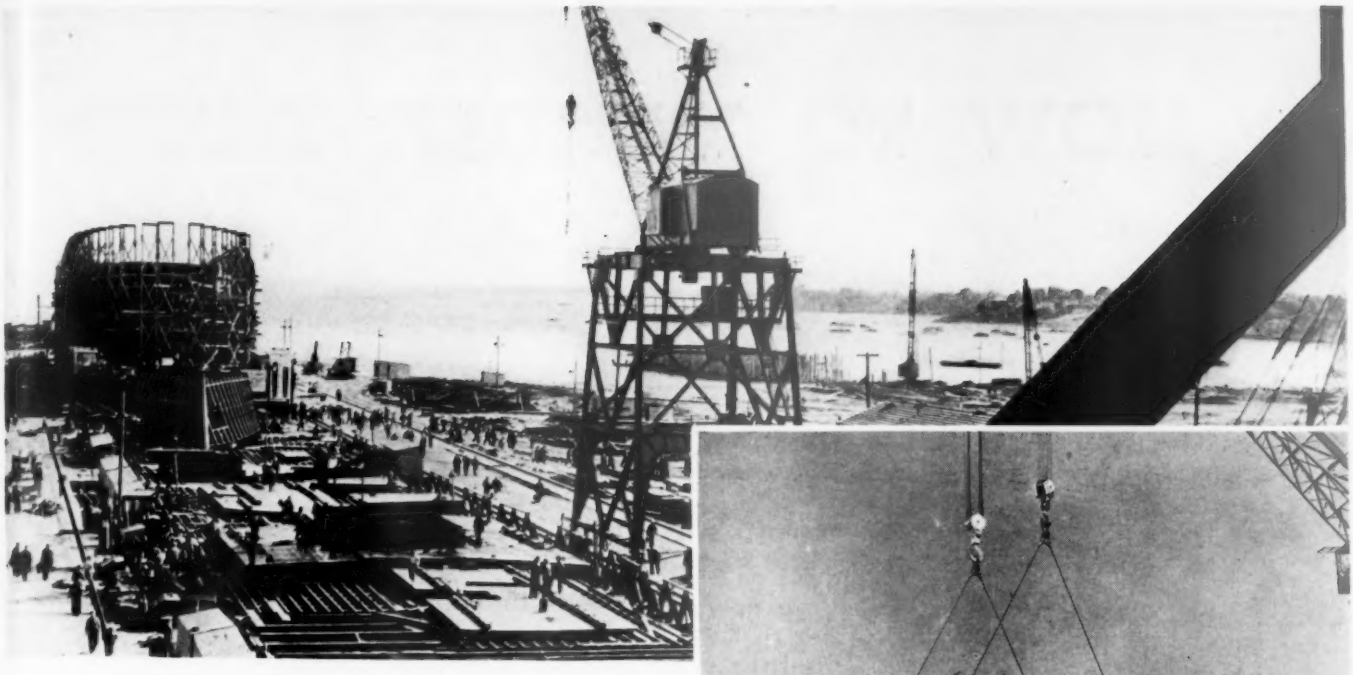
If the cost of building the vessel, however, exceeded the contract price, the contractor would get his cost and his minimum fee only.

Escalator Provisions

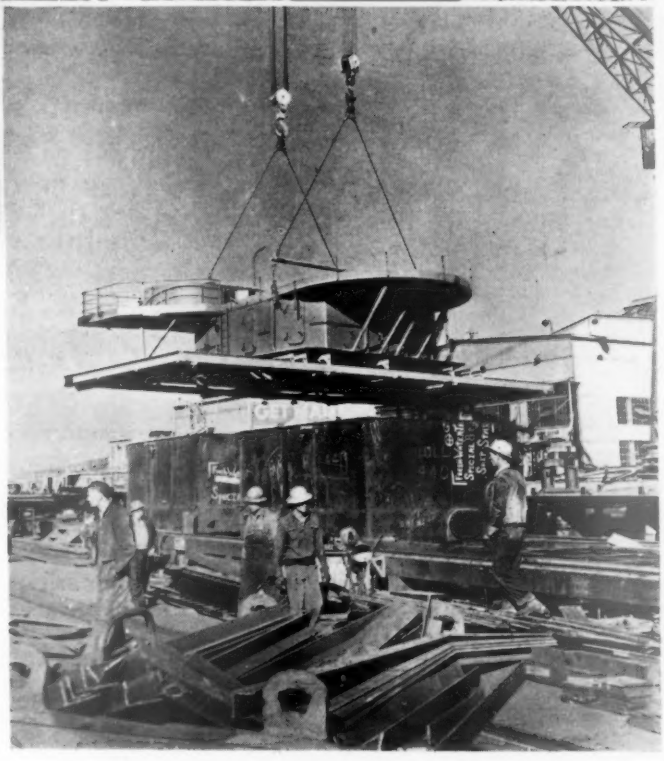
In order that the contractor may not be put at a disadvantage by increases in prices for material and in prevailing wage scales over which he has no control, and so be discouraged in his efforts toward economy, the contract price against which his performance is measured is subject to adjustment by the operation of escalator clauses covering materials and wages. Typical



Our merchant navy has been placed on a mass production basis.



Ship construction has attained a speed never before imagined.



Assembly line methods with prefabricated sections are used in building Liberty ships.

of these provisions is the labor adjustment clause, reading as follows:

> "The portion of the contract price represented by labor accepted as $————, divided into labor cost quotas for each month of the construction period as follows: (these quotas are stipulated). The Commission will obtain from the United States Department of Labor, Bureau of Statistics, the average hourly earnings in the durable goods group of manufacturing industries for the month of ————. The Commission will similarly obtain such average hourly earnings for each subsequent month of the contract period. The Commission shall determine to the nearest one-tenth of one per cent the percentage, if any, by which such average hourly earnings for the monthly period are greater or less than the average hourly earnings for the month of ————. The percentage of increase or decrease so determined will be applied to the stated quota for such monthly period, and the contract price will be correspondingly increased or decreased."

A similar provision is made with regard to cost of materials, except that these costs are based upon a quarterly, or three-months period instead of the monthly basis.

With wage stabilization agreements and price ceilings now in force, these escalator clauses are of much less importance than they were when the price-minus contract was first promulgated.

Applied to Man-Hours

A form of conract similar in its general effect to the price-minus, but differing somewhat in its details, is used for the Liberty ships. In this case, the economy-inducing provisions are based on man-hours rather than on total costs for the reason that the steel, machinery, auxiliaries, in fact, virtually all the parts and material for these highly standardized ships are purchased directly by the Commission and sent by it to the shipyard. This is done to permit of flexibility and economy in manufacturing and delivery. Since, therefore, the contractor is concerned mainly with economy of labor, a normal number of man-hours is stipulated in the contract and if this is realized in the actual building of the ship a normal fee is paid. But if the hours are exceeded, the fee is reduced, and if bettered, the fee is increased, again on a basis that in effect shares the savings, so that both the contractor and the Government get the benefit.

This again puts a premium upon managerial ability and efficiency, as is evidenced by a continuous down-curve in the man-hour charts of Liberty ship production.

In the case of the Liberty ships, the average time from keel-laying to delivery into service has been reduced from approximately 240 days for the early ships to 52.6 days by the end of 1942, and is still going down. While this cannot be accepted as a true index of reduction in man-hours, since it is the average of all and has been bettered by some, it is, nevertheless, a fact that all shipyards producing the Liberty type are showing a gratifying reduction in man-hours per ship.

Because of this expedited production, with corresponding ability to earn the fees more rapidly, the fees

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HOW TO HANDLE THE SALE OF SCRAP

Responsibility for the disposal of factory waste is centered in the purchasing department to keep the inventories cleared and to keep vital materials moving into channels of use

By C. R. STEVENS
Westinghouse Electric & Manufacturing Co.
East Pittsburgh, Pa.

THE Purchasing Department has the responsibility of negotiating for and selling all scrap metals and waste materials for delivery to outside parties. They also negotiate for the sale or trade of surplus new materials not desirable to be held in our inventories. Such sales are usually to the supplier of such materials, warehouses or jobbers.

All necessary information concerning the sales of scrap metals and waste materials, such as the name and address of the buyer, prices and terms of sales, grades, units of measure and number of units, shipping instructions and division to be credited with sales, etc. are incorporated in an L-order issue by the Purchasing Department. Copies of the L-orders are issued prior to the loading or delivery of any goods, affording full opportunity for all interested parties to be informed of all details of transactions before physical delivery is made.

Contract Arrangements

Over the years, we have had considerable experience in disposing of the Company's scrap and find that the types of scrap which accumulate at regular recurring intervals can best be disposed of by a contract arrangement with a reliable broker or consumer. Lots of scrap that occur regularly but in small quantities and lots that

1 — Accurate weighing of scrap metal is necessary. Here a scale attached to a crane simplifies this job.

2 — Twenty-five tons of steel scrap a day is handled by this giant shear which cuts odd sized steel into sizes best suited to feeding into steel mill furnaces.

3 — **Shown here is a load of scrap ready for processing. Materials are segregated at the source to avoid rehandling.**

are non-recurring are sold by spot contracts. However, all sales are subject to ceiling prices and regulations under the Emergency Price Control Act, signed by the President, January 30, 1942.

The following are the items disposed of by yearly contract:

1. #1 Heavy Melting Steel
2. Low Silicon compressed scrap
3. High Silicon compressed scrap
4. Miscellaneous iron and steel scrap
5. Clean cast iron borings
6. Dirty mixed borings and turnings
7. Clean mixed borings and turnings
8. Tin and terne coated mixed scrap
9. No. 2 Melting Steel scrap
10. Low phosphorus plate
11. Machine shop turnings
12. Electric and acid open hearth furnace grades
13. Low phosphorous plate splatter

Due to the critical period we are now in, and the important part scrap metals of all kinds play in the War program, every effort is being put forth by the Westinghouse organization to get out this scrap; e.g., factory cleanups in all divisions in a special drive to uncover dormant or surplus metals. Also, dismantling of obsolete equipment which previously would not be scrapped due to the high cost involved, but now must be moved out on patriotic grounds. Some examples are:—unused power lines, underground telephone lines, worn-out gondola cars, abandoned elevators, obsolete dies, jigs and fixtures, etc.

Most of the non-ferrous scrap is reclaimed at our Linhart works, but at various times certain grades accumulate which are of no use to them and, also, at times accumulation of useable grades may be far beyond their ability to consume. Thus a storage problem is created which must be relieved by selling part of the stock to outside buyers.

Items in this class are as follows:

1. Monel scrap
2. Aluminum borings and turnings
3. Foundry washings
4. Solder drosses
5. Various kinds of non-ferrous turnings, insulated copper, short ends, and grindings

The prices are negotiated on the basis of ceiling figures coupled with O.P.A. formulae for pricing complicated mixtures.

A Cash Business

In addition to the ferrous and non-ferrous scrap mentioned there are large quantities of fullerboard scrap, corrugated paper scrap, rubber, rope, cloth, burlap, etc., which must be disposed of. The market outlets are limited and it is generally simply a matter of making the best deal possible whenever sufficient accumulation is reported to make a shipment.

Scrap is sold on the basis of cash in advance to all buyers except to recognized suppliers of ours such as Bethlehem Steel, American Rolling Mill Co., American

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PREPARE FOR WAR CONTRACT RENEGOTIATION

The audit may be three years away, but legitimate profits can be protected now by gathering the evidence of costs and setting up the records in approved form

By E. L. CADY

THE renegotiation of war contracts is something for which every holder of any contract or subcontract must remain in a state of perpetual preparedness.

Right now this whole situation is subject to the permissive will of the government departments as to its duration, occasion, repetition and severity. Every statement regarding the protection of the contractor under renegotiation, must be followed by a "but".

Section 403 of Public Law 528 requires a renegotiation and review clause in every war contract or subcontract of $100,000.00 or over, but large auditing companies are talking of the probability of renegotiation if all the contracts of one company total $100.-000.00, and there is nothing whatever in the law to prevent renegotiation of any contract whatever, no matter how tiny.

The law limits renegotiation periods to three years after the termination of the war, but renegotiation and review was being done long before this law was passed, and persons "in the know" expect it to perpetuate itself as an instrument of public policy indefinitely.

Right now there are no "hordes of auditors" poised to spring upon the unwary contractor . . . the Navy Price Adjustment Board has 22 full time accountants and analysts on its payroll, with perhaps 100 others signed up to be called in on assignment basis whenever needed, and the War Department nad the War Price Adjustment Board, etc., have only proportionately larger forces . . . but there is nothing to prevent those forces from being augmented if, after the war, the need to supply depression employment for accountants should arise.

Contracts now are renegotiated on the basis of all contracts of any one contractor being considered together, so their mass rather than their individual effect upon profits is disclosed, but there is nothing to prevent their later renegotiation on a contract-by-contract basis nor their mass renegotiation if additional contracts change the profit picture or if the government sees fit to re-renegotiate.

The War Price Adjustment Board appoints the agency which has the principal or the most profitable contracts placed with a contractor, to renegotiate all of that contractor's contracts for all of the other agencies. The Navy Price Adjustment Board might renegotiate for the Army and the Maritime Commission as well as for itself in a given case, but there is nothing to prevent the other agencies from stepping in later and re-renegotiating their own contracts.

Renegotiation studies of the books and practices of a contractor are not sharp nor detailed enough to be audits; they are not as detailed as tax studies, etc., and are intended to be "not accurate or precise on costs, but reasonable regarding profits on government orders". But there is nothing to prevent re-renegotiations from becoming sharper.

How Renegotiation Will Be Done

It is expected that all renegotiation will follow certain definite principles. For example, all contractors in the same general line of war production will be permitted the same general profit percentages and will be treated as much alike as practicable, but there will be incentive awards of higher allowed profit percentages to contractors who earn them by higher efficiency, and there will be penalties for the inefficient.

Profits always will be figured percentage-wise on volume of business done; never dollar-wise.

Profits on government contracts will be lower than those characteristic of the contractor's peace time civilian lines, if the contractor has or has had any.

Profits will be higher percentage-wise on low volume short runs of items new to the contractor than on high volume long runs.

The review period will occur whenever production on a contract "settles down" so that the accuracies of the estimates upon which the original contract prices were based can be checked; if practicable, the end of a fiscal year will be selected as the review period.

New review periods, or re-renegotiation periods, will occur whenever indicated. Thus the placing of a new contract with a contractor who already has several, might increase the profits on the old contracts and lead to re-renegotiation of them.

Any renegotiation or re-renegotiation can be a more severe or less severe burden upon management in accordance with whether or not management does or does not do certain things. There are ways to win in the renegotiation game, and ways to lose. And many of those ways lie within the province of the purchasing department. The government intends to keep the profit incentive system alive in industry, if for no other reason than to get out more production for the winning of the war. Managements which follow the "ways to win", are expected to be allowed higher profit percentages as higher incentives.

Ways to Win

Be prepared to show the achievements and contributions of the purchasing department in more efficient production for the winning of the war. Have definite records of what has been improved.

Demonstrate high economy in the use, conservation and control of strategic raw materials.

Keep the war time "pattern of procedure" as close to the peace time one as possible; the pattern of procedure being the stock handling, cost calculation, and other methods by which the bases of costs and of profits are shown. If the pattern is materially changed for war contracts so that it becomes difficult to conpare the war-time profit percentages with those of peacetime, then renegotiation investigations may be severe enough to establish a similarity of pattern in the minds of the government bureau men for comparison between the two periods.

Work to standards in materials, items and prices; prefer the standards which are common throughout the industry. The Price Adjustment Board intends to bother industry as little as possible for facts and records to use as yard sticks, but rather to go to published sources on prices, the OPA records, the Bureau of Internal Revenue, and similar sources. Standard materials, prices, etc., which are in line with these public sources will be easy to measure by yard sticks so created; but materials and methods which are "special" or are out of line may lead to special investigations of the contractors having them.

Show superior performance in increasing production volume.

Demonstrate the purchasing department's contributions to the finding of raw materials, interviewing of Sales Engineers or locating of special services, etc., leading to meeting or bettering delivery dates on war orders, reducing costs and prices, inventing of new devices useful in war, developing new production methods, and the like.

Have records of cooperation with other contractors; it will count if one contractor lends management skills to another or is wise enough to borrow such skills when needed.

Higher profits will be allowed for higher risks; be prepared to show risks taken in the light of hazards of changes in materials costs, labor costs, product improvement possibilities, product development opportunities, materials shortages, priorities troubles, product performance guarantees, contract termination problems, post-war readjustment to peace lines difficulties, and similar business hazards incident to war contracts.

Demonstrate how every advantage has been taken of opportunities to mitigate risks by asking the government for new and better terms; to some extent renegotiation is a two way street.

More favorable government payment terms often are available if the development of the production schedule shows them to be needed. Show how these terms were requested and employed to reduce capital risks and other contract hazards; the renegotiation of these risks may not be in the hands of the purchasing department, but the instigation of these negotiations, the showing of the need for different sharing of risks, may arise from the need of procurement for more financing of purchases.

Show how new negotiations with the government have been passed along to reduce the risks of the subcontractors from which the purchasing department is buying.

Show how payment terms to subcontractors and other suppliers, together with other financing, have been so handled that as much of the contractor's own capital is being employed and as little of the government's money as practical is being employed on the contracts; show how the contractor's money and the government's as well is being turned over rapidly, etc., so that less capital does more work; the more of the government's money employed on a given volume of business and the poorer the employment of money in general, the lower may be the percentage of profit allowed.

Show how inventory is being so handled, that materials are on hand to keep the contractor's own facilities employed full time before resorting to subcontracting to fill in the production gaps. In general, higher profit percentages will be allowed the contractor who wants to produce rather than "farm out" the work, but not to the contractor who unnecessarily increases its own facilities when subcontracting facilities are available.

Specific Procedures

There are specific procedures which the government departments probably will favor. There is nothing iron-bound about these; a contractor may choose his own methods but renegotiation may be less irksome if the government favored methods are followed. Here are a few:

Use a recognized inventory method, such as first in first out, last in first out, average costs, standard or normal costs for the contractor's industry, or specific purchase prices.

If trade association memberships for the company are selected by the purchasing department, be prepared to show their specific values, as otherwise the dues, etc., may be disallowed as items of cost.

Contributions to local charities must be shown to constitute ordinary and necessary business expense.

Excess production facilities must be shown to be necessary and reasonable stand-by facilities, otherwise the expenses for their depreciation and manitenance cannot be items of costs.

Premiums for life insurance on the lives of company officers, etc., are not items of costs.

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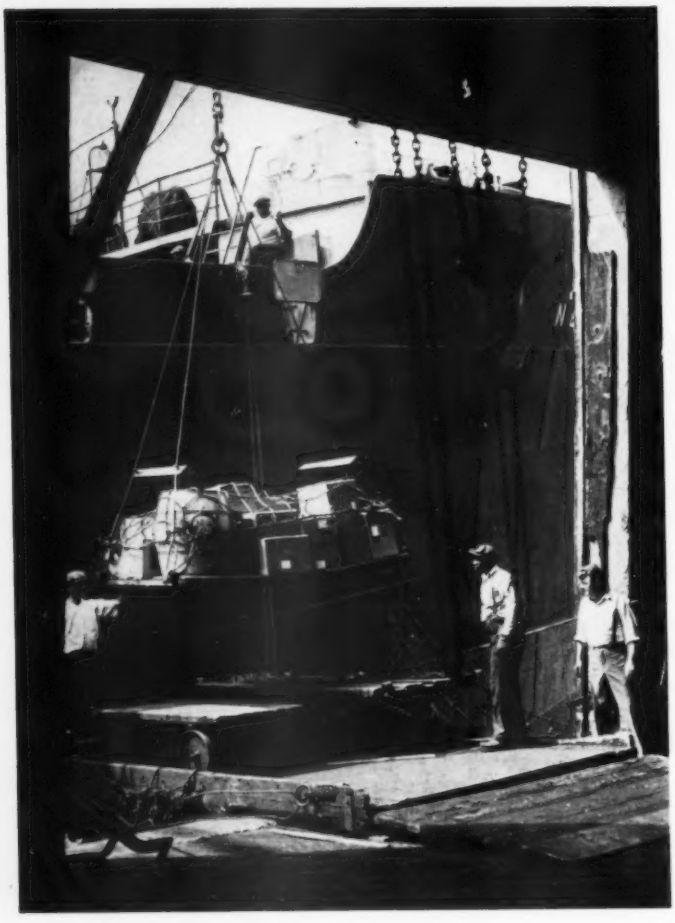
WHAT THE GOVERNMENT AUDITOR WILL LOOK FOR

Efficiency	**Sound Accounting Methods**	**Standard Procedure**
Conservation	**Prudent Use of Government Funds**	**Foresight**
Cooperation	**Elements of Business Risk**	**Maximum Utilization of Facilities**
Capital Turnover	**Resourcefulness**	**Sensible Subcontracting**



Repair and Replacement Parts for Overseas Forces Must be Protected by Corrosion and Rust Inhibitors, and Packaged in Water- and Moisture-proof Wrappers

By GEORGE HENRY

SPECIAL attention is called to Army-Navy General Specification for Packaging and Packing for Overseas Shipment, prepared by the Container Coordinating Committee, and issued February 15, 1943. This bears U. S. Army Specification No. 100-14-A, and U. S. Navy Specification 39P16a.

Section XVI covers Corrosion Prevention. It includes General Specification for Preservation and Packaging of Metal Parts and Equipment, and deals with Materials and Workmanship, Procedure (coating or dehydration), Inspection, and gives a partial list of specifications of the War Department, Ordnance Department, and Army-Navy Aeronautical Specifications.

Section XVII treats of Grease-Proof Bags.

The Specification states that the principles set forth "will usually be amplified by detailed specifications of the procuring agency, which will state not only the method to be used, but also other pertinent details of procedure. Also, it is always necessary for the procuring agency or agency concerned to instruct the supplier regarding the specifications for the preservation materials to be used. Each branch of the services have their particular specifications which have been found most satisfactory for specific applications."

How to PREVENT RUST DAMAGE

AN old disease that imperils the dependable repair of military equipment in foreign lands and thus hazards the efficiency and the very lives of our overseas fighting forces, has come to the fore. It is not an affliction of the flesh. It is a morbid dermatitis born of oxidation and rust that is destructive of critical metal parts—parts meant for replacements and emergency applications on the fields of battle.

Americans and Anzacs who are stabbing it out with the Japs "down-under," those in the coordinated AEF (Americans-English-French) who are finessing Rommel into a Dunkirk ala Bizerte, and the Yanks sojourning in the gloomy Aleutians and other equally undesirable global parts will tell you of the seriousness of this disease of metals.

They are the men who open cases of repair and replacement parts to find them ruined by dermatitis or rashes in the form of oxidation, rust, whelks and pits. What good is an aluminum piston pitted and corroded almost to the point of scurf whose rings are rusted and "frozen"; what good are piston rods frozen to wrist pins, or replacement motors whose commutators are swollen with green rash, gaskets so pitted that they leak like a sieve; what good are rusted precision bearing assemblies, or carburetors that look as though they were picked out of a garbage dump?

Hundreds of thousands of costly critical parts made of critical materials by critical manpower are being rushed to army depots. The most of them are potential dermatitis cases of one kind or another for the reason that they have not been subjected to simple preventive treatment. All of them, every single unit, must be inocculated so to speak, for it is impossible for a depot to determine when or where they will be shipped.

The contributing causes are several. Federal specifications and Army specifications and constant revisions seem to cover everything under the sun and are infinitely detailed. Though especial attention has been given to shipping containers, apparently the far-end detail of correct protective coatings for small, packaged metal repair and replacement parts to insure absolute protection against salt air and salt water was not included in the agenda of conjectures incident to overseas shipment of such parts. In normal shipping adequate cargo space and the protection thus afforded suffice but the emergencies of war and complications have created new and urgent needs.

In all fairness it must be stated that many of the large producers of parts obviously were aware of the exigencies of overseas transport for they have adequately protected parts with the *right* kind of base protectives and wrappings and correctly boxed and identified each part. But hundreds of parts manufacturers do not yet seem to grasp the facts and demands of global warfare. They are packaging their products as in the days of yore—as though they were destined to a warehouse in Peoria rather than a possible end-destination in Tunisia.

Some of these parts manufacturers have literally taken for granted that aluminum is a non-corrosive

material, that copper is everlasting, or that the use of a highly finished steel part merely involves wiping it off. They do not seem to know that die-cast aluminum parts will corrode in salt air, that whelks of green rash develop on exposure of nicely finished copper parts to air and water that is salt-laden; nor do they understand that invigorating sea air and sea spray will pit and corrode micro-finishes and 10/000 tolerances, making the use of such parts extremely hazardous. A rusted precision roller bearing is useless; it cannot be restored on the battle field, and if it were used in the condition in which it is received it might be the cause of more serious damage to other vital mechanical parts.

Many manufacturers do not seem to realize that customary commercial-type packing is not war-time overseas packing. The latter must be more thorough and perchance a little more technical. Also, export shipping formerly had the benefits accruing from adequate shipping space and shippers basked under the protection of marine insurance. Today the smug protection of adequate cargo space is a minus factor, and insurance on a destroyed piston ring does not mean a tinker's damn to an air corps mechanic.

Returned pistons, gears, motors, shafts, bearings and thousands of other replacement parts that have made the overseas journey present prima facie evidence of the destruction wrought by sodium chloride. They are useless. But, they have indelibly impressed upon authorities the fact that though salt air and a salt water bath may pep up and rejuvenate humans, they literally "raise hell" with critical parts for the weapons of war—to quote an army man.

Our forces are now feeling the full impact of war. The risks involved in possible receipt of damaged parts that it is just a matter of daubing or dipping a part in grease and using any kind of wrapping paper. These are two of the reasons that military authorities are getting "het" up over the situation.

One of the army divisions that has given the subject considerable study and found the "know how," is the Spare Parts Branch, Engineers Section, Columbus (Ohio) Depot. While this section has developed a highly satisfactory method for protecting parts based on exhaustive tests of preventive coatings, sealing materials, and wrappings, it is open to suggestions as to new methods or materials, or satisfactory substitutes for those now used. In fact, new thought on this important subject is invited. In the meantime, it will gladly furnish to any manufacturer, full information as to the approved procedure it has developed.

This branch has found it necessary to apply "protective maintenance" to thousands and thousands of parts. Spot tests of lots are made. If the protection is inadequate, the job is to repackage, and that is done. The original wrapping is discarded. Incidentally, one exhibit of slovenly, careless "protection" was a crank shaft daubed here and there with a heavy grease an eighth-inch thick and other portions wholly unprotected. This was originally wrapped in a half dozen sheets of tissue and a heavy, loose wrapper.

But to go on. After the original wrapping is discarded, the next step is "processing." The part is thoroughly cleaned and then given a rust or corrosion inhibiting coat. The Branch has determined that certain specific compounds are best fitted for certain metals, and for say complicated parts. On high precision parts a protective compound is used that does not have to be

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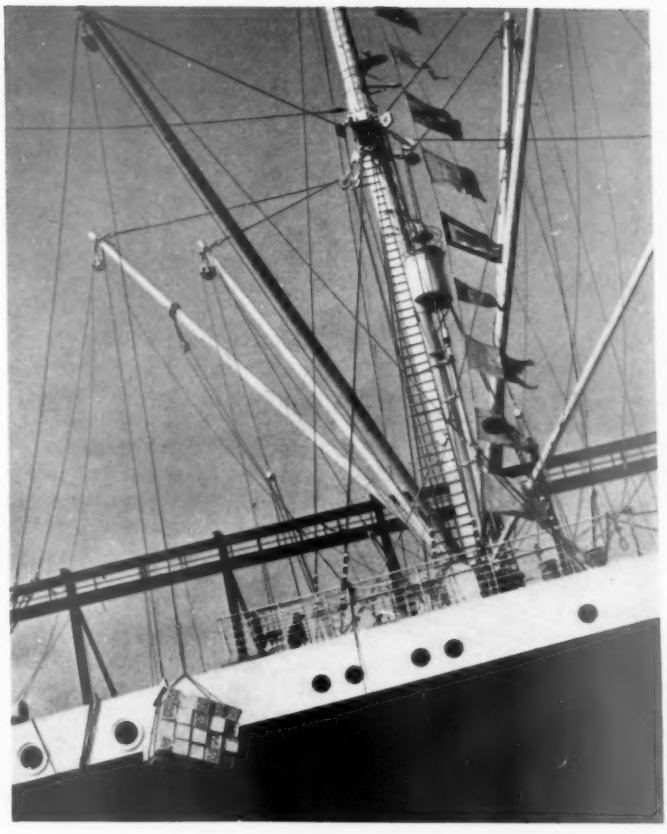
to OVERSEAS SHIPMENTS

by armed forces cannot be tolerated. When a replacement must be made, it must be made with a part that will function 100%. Correct protection and packaging of parts is an indispensable phase of that tremendous word logistics. Moreover, each package must be accurately identified as to content, number, and size, for though field mechanics are doing the magical and the impossible, they cannot always accurately guess as to what may be in any one of a myriad of packages and cartons.

Because of the troubles experienced with damaged parts by army depots, the depots have found it necessary to expend manpower and time conditioning and repackaging hundreds of thousands of parts to insure their receipt overseas in A-1, usable condition.

And so our Purchasing Agents have a new and vitally important job in addition to that of procuring the materials for these parts. It is their responsibility to procure the right kind of approved coatings for certain metals and parts, and approved sealing, wrapping and cartons, and equipment for properly identifying each package.

In Army parlance the term "protective maintenance" is applied to this vital job. As stated above, to you it is protective coatings and correct wrapping, sealing and packaging. It must not be taken for granted



Correct Protection and Packaging of Parts for the Armed Forces Overseas is Indispensable.

INDUSTRIAL ORGANIZATION HELPS CIVILIAN ECONOMY TO MEET WAR SHORTAGES

Understandably, the civilian home front and its problems have been the stepchild of WPB in the drive to speed military output. But American industry serving the consumer has been quick to to take the lessons learned in meeting its own problems and to apply them for the benefit and convenience of the public.

C³ in '43
COUNTRY • COMMUNITY • CUSTOMER
1943
Sales Department Program
MISSISSIPPI POWER & LIGHT CO.
GROUP RIDING Saves TIRES AND GASOLINE
and GROUP COOKING Saves TOO!
PROTECTIVE COOKING
is ESSENTIAL, too!
We'll Help Your Group Study NUTRITION
Mississippi Power & Light Company
REPORTING
— Protective Storage of Food is Essential too!
If Your Family is to have meals of Maximum Health Value
Mississippi Power & Light Company

Outstanding example of such a constructive program is that devised by the Sales Department of the Mississippi Power & Light Company, serving 314 towns in western Mississippi, with headquarters at Jackson. Extension of service is out for the duration—also new equipment and appliances. Nothing to sell! But the Sales Department is busier than ever in a three-fold service program for Country, Community and Customer.

Primary emphasis as on repair, maintenance, and conservation of existing equipment. Effective utilization—protective cooking and storage of foods, and scientific nutrition, are tied in with the war effort in advertising and service.

The program is developed in practical detail, down to aiding the housewife in the simple act of changing fuses in her own home, thus conserving tires and manpower on service calls. A tag attached to the fuse box places the directions right at the point of use.

The "placement service" is a clearing house for used appliances. The company offers its facilities in bringing together those who wish to sell, buy, or trade such equipment, thus keeping it in use to the maximum satisfaction of all concerned.

The mechanics of the system are simple—a registration card (which is also given wide distribution as a coupon in newspaper advertisements) and a control sheet on which the local managers post the registrations. A master list is maintained for reference and exchange between the various territories. Lists are kept up-to-date by a periodical "purge" and requiring re-registration if disposition is not made within sixty days.

Help Conserve Tires, Service Cars and Manpower
★ Replace Your Own
FUSES
It's Easy!
JUST LIKE CHANGING A LAMP BULB!
Most folks always have avoided long waits in the dark and inconvenience by replacing their own fuses
★ HOW TO REPLACE A BLOWN FUSE . . .
Keep A Supply of Extra Fuses On Hand
ssippi Power & Light Co.
YOU CAN HELP
. . . CONSERVE TIRES, CARS, MANPOWER FOR ESSENTIAL SERVICE CALLS . . .
1. Changing your own fuse plugs.
2. Letting us know ahead of time when you are moving so we can handle your meter along with many others.
IT'S AS EASY TO CHANGE A FUSE AS A LIGHT BULB
MISSISSIPPI POWER & LIGHT CO.
If You want to
SELL, BUY or TRADE
USED ELECTRIC and GAS APPLIANCES or EQUIPMENT
Use this FREE, New War-Time Placement Service!
A WARTIME PLACEMENT SERVICE to HELP YOU
BUY, SELL or TRADE
Used
Appliances and Equipment
WARTIME PLACEMENT SERVICE
FOR GAS AND ELECTRIC APPLIANCES & EQUIPMENT
MANAGERS CONTROL SHEET
TOWN
NO.
NAME
ADDRESS
DESCRIPTION
ARTICLE
MAKE
SIZE
AGE
CONDITION
MISSISSIPPI POWER & LIGHT COMPANY
WARTIME PLACEMENT SERVICE REGISTRATION CARD
For those who wish to Buy, Sell or Trade Used Electric and Gas Appliances or Equipment
Date
Phone
1. Name
City
2. Address
Make
3. Article
Approx. age
4. Size or capacity
Good
Fair
Poor
5. Condition
6. Want to
Buy
Sell
Trade for
It can be seen at
Location
Time
7. Repairs needed

SOME REASONS WHY PURCHASERS LOSE LAW SUITS

Higher court decisions provide the key to contract procedures that will protect the buyer and stand up before the law.

By LEO T. PARKER

Attorney at Law
Cincinnati, Ohio

BROADLY speaking, the reason a purchaser may lose a law suit is because he was not familiar with the modern law at the time he made the contract. This lack of elementary legal knowledge may result from failure to read the cause and outcome of new and modern litigations involving other purchasers.

In other instances readers acquire inaccurate knowledge of sale contract law by reading reports of lower court decisions. Actually the higher courts reverse many lower courts. Therefore, by reading lower court decisions the law acquired may be exactly the opposite to the actual and authentic law. Therefore, in these pages only modern higher court decisions are explained. whereby readers are assured of acquiring dependable and authentic legal information.

Primarily for the purpose of illustrating legal mistakes to be avoided by purchasers we shall, in this article, review the latest higher court cases in which purchasers have received unfavorable verdicts.

Bill of Lading Pitfall

First, we shall review an unusually interesting higher court case involving potential losses which may arise from purchase of merchandise represented by either bills of ladings or warehouse receipts. In this case bills of ladings were involved, but the same kind of financial losses may arise from careless purchase of warehouse receipts.

In African Metals Corporation v. Bullowa, 41 N.E. (2d) 466, it was shown that three men formed a corporation called the Meade Steel & Metals Company, Ltd. The total assets of the corporation were $2,110 with total liabilities of $1,487, and a net worth of $623.

The Meade Steel & Metals Company sold to the African Metals Company, and another corporation, five carloads of material represented to be pure nickel cathodes for an aggregate amount of $152,399.50. When received, the material turned out to be junk of parts or old automobiles and other scrap of no value.

Before delivery of the material the African Metals Company, and another corporation, paid the full amount of $152,399.50 to the Meade Steel & Metals Company upon receipt of the bills of lading which were supposed to represent the cars that contained pure electrolytic nickel cathodes, but which cars actually contained scrap iron.

Instead of the incorporators of the corporation placing the $152,399.50 to the credit of the corporation organized by them they personally took this money.

The African Metals Corporation, and the other corporation which purchased the material, sued the incorporators to recover the money thus paid.

It is interesting to observe that the lower court held these men not liable because the money had been paid to the corporation which they had organized.

However, the higher court reversed the verdict and granted a new trial. Obviously, the outcome of the new trial is doubtful and although a judgment may be awarded against the incorporators, still there remains the uncertainty of collecting the awarded judgment from them. In other words, if these incorporators have no assets, the judgment, although rendered in favor of the purchasers, cannot be collected.

Prompt Inspection Is Important

Also, see Esbeco Distilling Corporation v. Owings Mills Distilling, 43 F. Supp. 380, reported May, 1942. In this case it was disclosed that distiller deposited whiskey in a bonded warehouse and issued warehouse receipts. Some of these receipts were drawn to the distiller's own order and indorsed to third party purchasers.

Controversy arose over the quality of the whiskey, as represented by the warehouse receipts. The purchaser contended that it was a cheaper grade than he had purchased.

It is important to know that this court held that in determining the distiller's liability for the alleged inferior quality of the whiskey, the distiller was to be considered as being in the *same position* as a seller under a simple contract of sale so far as implied warranties were concerned.

The testimony in this case proved that although the receipts specified whiskey of a grade and type which matured sufficiently after about two years from its distillation to enable its true character to be ascertained, the buyer did not request any samples of the whiskey until more than three years after the latest distillation of any of the whiskey purchased. In this case the higher court held that the purchaser's request for rejection of the whiskey, were not made within a "reasonable time". Under these circumstances the higher court held that the buyer could not recover for the alleged breach of warranty on the part of the seller.

The lesson of this decision is that where a purchaser of merchandise intends to plead an implied warranty, he must file the suit within a reasonable time after actually discovering, or with proper opportunity to discovery, the poor quality of the merchandise.

The important lesson learned by readers from explanations of this litigation is: Never advance money on bills of lading or warehouse receipts unless certain that the merchandise represented actually will be forth coming.

Legal Rights of Purchaser

As previously explained in these pages modern higher courts have adopted a legal rule that where a seller breaches a contract of sale the purchaser has several remedies among which he may choose. He may either

(a) affirm the sale, notwithstanding the breach, and carry out his part of the agreement;

(b) rescind the sale, returning the merchandise and recover anything already paid on the purchase price;

(c) affirm the sale, and, if he has been damaged by the breach of the contract by the seller, set off the amount of damage on a suit by the seller for the balance of the purchase price; or

(d) sue the seller for damages. He must, however, elect between these remedies, and is bound by his election. If he retains or uses the merchandise, he cannot refuse to carry out his part of the agreement, although he may recover the damages from the seller equal to the financial losses he suffered.

Protection Against Ultimate Loss

On the other hand, when a purchaser breaches a contract of sale the seller has legal rights against the purchaser. Furthermore, a purchaser who fails to fulfill the terms of a contract is liable, not only to the seller, but also to assignees, trustees and the like.

For instance, in Farst v. Meduna, 130 Pac. (2d) 361, reported November, 1942, it was disclosed that the owner of a corporation, the Metal Bonding, Inc., sold certain merchandise to a purchaser. The contract specified that the seller "will cooperate in every reasonable way with the vendee"—supplying "customer files and records," and referring to the vendee "all phone calls and other inquiries regarding the metal bonding business," and the vendor "shall not engage in the metal bonding business from this date henceforth", etc. The contract further provided that upon full payment of the purchase price, the name "Metal Bonding, Inc.," shall become the property of the purchaser.

Soon after the contract was made the seller made an assignment for the benefit of creditors. The seller disconnected his telephone and discontinued the use of the name "Metal Bonding, Inc.". Therefore, he placed himself in a position where he could not "cooperate in every reasonable way" and could not "transfer . . . . the business and customers" according to the terms of the contract.

The purchaser of the material refused to pay the agreed contract price, but the higher court held that the fact the seller discontinued business was not a valid excuse for the purchaser to refuse to pay for the materials. This court said:

"In any event, by the very terms of the contract, the vendor was bound 'to refrain from engaging in the metal bonding business . . . . from this date henceforth.' And, further than that, we think that, under the evidence, the vendor did "cooperate in every reasonable way" to transfer . . . . the business and customers to the vendee."

Obviously, if this contract had not contained a clause wherein the seller had agreed that he would not engage in business in the future he would have been held *liable* in damages for rescinding the contract of sale. However, since he had agreed to discontinue his business, he could not, from a legal standpoint, fulfill the balance of the contract and "cooperate" with the purchaser.

There is nothing complicated about this decision. If the purchaser had been familiar with the modern law he may have included a clause in the contract designed to protect himself against ultimate loss.

Waiver of Rights

In other words, a purchaser must protect himself in the original contract or he is doomed to lose a subsequent suit.

For example, in Monarch Company v. George J. Meyer Manufacturing Company, 130 F. (2d) 582, reported November, 1942, it was shown that a company contracted to purchase certain machinery. The seller guaranteed to replace defective parts, but the contract contained a clause exempting the seller from liability for delay, damage or consequential damage in shipment, erection or operating of the machinery.

When the machinery failed to operate satisfactorily the company complained. The seller attempted to repair the machinery, but the company officials still were dissatisfied and a suit was fied. The company asked the court to compel the seller to take back the machinery and refund the contract price.

However, it is important to know that the higher court refused to do so and held that when the company official signed the contract containing the above mentioned clause the company became obligated to accept the machinery, keep it and pay for the same.

In view of the outcome of this litigation, it is quite apparent that purchasers, when signing sale contracts, should be certain that no waiver clauses in favor of the seller are in the contract.

Contract Review

Legally a valid contract is an agreement between a buyer and a seller by which each is *expressly* or *impliedly* obligated to perform certain and definite acts, not prohibited by law, within a predetermined period. The important question, when deciding whether a contract is valid, is: Did both parties intend to be obligated?

For example, in Pittinger v. Southwestern Company of Fort Worth, 151 S.W. (2d) 922, the higher court held that in construing a written sale contract, the paramount question is the parties' intention, which must be determined from the language used in the contract. If this is not possible then the surrounding facts and circumstances, when the contract was executed, must be thoroughly considered. This latter rule of law is especially applicable to correspondence contracts.

The important point of law usually involved in correspondence contracts is: Did one contracting party submit an offer which was *unconditionally* accepted by the other party? If so a valid contract is created, otherwise no contract is completed.

If a seller offers by mail to sell merchandise at a stipulated price this offer remains effective for a reasonable period of time *unless* the seller writes and withdraws his offer before it is accepted by the purchaser. However, if during the correspondence the purchaser agrees to pay a higher price than was originally quoted, the old agreement is automatically cancelled, and the purchaser forfeits his right to rely on the first and original agreement.

Correspondence Alters Agreement

For illustration, in J. P. Stevens & Company v. Great Falls Company, 126 Pac. (d) 827, reported July, 1942, the controversy arose out of a series of letters between the two companies in regard to the sale of certain merchandise.

In the first letter the purchaser requested the seller to bid on certain and definitely described merchandise. The seller answered quoting a price. The purchaser then proceeded to contract with another company to sell the goods on the basis of these quoted prices, but he neglected to place his order with the seller.

In approximately five weeks the purchaser wrote accepting the offer in the seller's letter. However, the seller answered stating that his prices had been increased the week previously, and that he would not ship the ordered merchandise at the specified prices.

Controversy developed when the purchaser contended that the first letter received from the seller constituted an offer which was accepted by the purchaser in the letter mailed five weeks later.

During the trial the testimony proved that the purchaser had written another letter asking the seller to accept his order at the prices originally quoted by the seller, and that the seller refused to deliver the goods on the basis of the prices quoted in his first letter. Then the purchaser placed his order at the increased prices. The seller delivered the goods after receipt of this last letter from the purchaser. Later the purchaser refused payment at the increased prices and the seller filed suit.

The purchaser argued that the seller had made an offer in his first letter and that he had five weeks later accepted in all details this offer.

From a legal standpoint this contention is true because the testimony proved that the *seller had not withdrawn* its offer made in the first letter, and, also, modern courts hold that an offer of this nature is good for a reasonable period *until it is withdrawn.*

However, instead of demanding delivery of the merchandise at the prices quoted the purchaser, as previously explained, wrote two other letters and in neither did he demand delivery of the merchandise at the quoted prices, but instead finally placed the order at the higher or increased prices. Therefore, the higher court held the purchaser obligated to pay the higher prices, saying:

"No one disputes that at their option they (purchaser) might have taken that course, (and demanded delivery of the goods at the first prices) and that the company (seller) would have been responsible for all damages legally attributable to the breach of its contract. But the defendants (purchaser) did not elect to take that course. They chose for reasons which they must have deemed sufficient at the time to submit to the company's demand and pay the increased price rather than to rely upon their strict rights under the existing contract . . . ."

Latest Agreement Governs

Also, see Jefferson Company v. Empire Paper Box corporation, 23 Atl. (2d) 106, reported September, 1942. Here it was shown that a manufacturer made a written contract with a purchaser by the terms of which the purchaser agreed to accept and pay for an agreed quantity of merchandise.

The manufacturer delivered a shipment of the merchandise which at first was not considered satisfactory by the purchaser. However, after negotiation, the purchaser accepted the shipment. The manufacturer refused to ship the balance of the merchandise at the previously agreed price, but offered to make delivery at an advanced price. The purchaser at first rejected this offer but finally, after considerable correspondence, a new agreement was made. Later, however, it was contended by the purchaser that the new agreement had not cancelled the old or original contract.

However, it is interesting to observe that the higher court held that the purchaser had automatically agreed to relieve the manufacturer from liability for breach of the original contract when he made the new agreement.

In other words, the court held that the parties were obligated *only* by the terms of the new contract.

The outcome of these higher court decisions should be remembered by readers. If a seller submits an offer which the purchaser accepts within a reasonable period of time the latter can demand the seller to deliver the merchandise at the specified price. If the seller refuses to do so the purchaser may sue and recover damages based upon breach of the contract. But if the purchaser places an order at an increased price this act automatically cancels the first contract, and the purchaser is obligated to pay the higher prices.

Liable for Full Losses

It is well established law that a purchaser who breaches a contract of sale is liable in full for damages suffered by the other party. The fact that a jury may decide in favor of the purchaser is not important if such decision is not proper and legal.

For example, in Riedt v. Winters Company, 128 Pac. (2d) 1008, reported August, 1942, it was disclosed that a buyer and a seller entered into a contract of sale by the terms of which the seller agreed to supply specified merchandise at a stipulated price. When the date for delivery of the merchandise arrived the purchaser refused to accept delivery. The seller offered the goods for sale to others at the highest price obtainable. Due to abnormal conditions the seller was compelled to accept $535 less than the price at which the merchandise had been originally sold to the purchaser. The seller sued the purchaser to recover $535.

The purchaser admitted the execution of the contract and refusal to accept any pay for the merchandise bought under the contract. The jury considered all testimony and held the purchaser liable for only $50.

It is interesting to observe that the higher court refused to approve the verdict, and said:

"The evidence is devoid of any evidence competent or otherwise which would justify the finding that plaintiff's (seller's) damage was the sum of $50. . . . . The jury by its verdict having resolved all of the controverted issues in favor of the plaintiff (purchaser) could not arbitrarily limit his recovery but were obliged to assess it in accordance with the measure of damages given them by the court in its instructions."

In other words, this higher court held that where either a buyer or a seller proves that the other party breached a contract of sale, the jury is bound to allow an amount in damages *equal* to the actual financial losses sustained by the party who was willing to fulfill the terms of the contract.

As above explained, with respect to a seller who offers to deliver merchandise in accordance with the terms of a sale contract, the purchaser who refuses to accept delivery is liable for the full and actual losses sustained by the seller. And a verdict rendered by a jury contrary to this principle of law is void.

Make the Contract Specific

Readers may well remember the lesson taught in each of the higher court cases cited in the above explanations. In each case the purchaser was caused heavy losses by failure to realize the necessity of transacting business in strict accordance with the modern law relating to contracts for the purchase of merchandise.

The legal rights of both buyers and sellers are clearly defined, and not much complicated law is found in any of the above explained litigations. The important point in all of these legal controversies is that the purchasers failed to take advantage of their legal rights. It is true that the courts will not, under any circumstances, read into a case that which the purchaser had an opportunity to incorporate, but failed to do so unless the testimony proves that the seller performed acts, made statements or otherwise took advantage of the purchaser.

So, therefore, in a forthcoming issue we shall review late and leading higher court cases, all of which deal with the various situations of when and how sellers took advantage of buyers, and the subsequent legal rights of such buyers.

CRITICAL MATERIALS REPLACEMENTS

Critical bottlenecks lie in shortages and the dearth of certain critical materials. The following list of substitutions and other forms or replacement listed in "Wartime Conservation" published by Westinghouse, may suggest to you means by which you can save critical materials in your plant:

Varnished Silk has been replaced by thin varnished cambric.

In many cases, felt has replaced rubber in dust-proof gaskets.

Nickel alloy has been replaced by silicon iron in certain types of current transformers.

Glass containers are being used as substitutes for tin cans.

Tapioca glue, formerly used extensively in coil structures, has now been completely replaced by dextrine glue made from corn.

Toluol has been replaced by petroleum, hydrogenated petroleum or other aromatic solvents.

Electrolytic zinc plating is replacing cadmium plating on more than half of our hardware.

Silicon bronze is being used instead of Monel Metal in the manufacture of mercury arc rectifier anode shanks. Stainless steel stampings and castings containing 13% chromium were originally substituted for nitriding steel containing aluminum and chromium. On a number of items, the stainless steel is now being replaced by carbon steel, plated with chromium only at points where resistance to corrosion and wear is essential.

Phosphor bronze is being replaced by carbon steel in certain disc springs.

All purchases of nickel bearing constructional alloy steel bars and billets were discontinued and were replaced initially by chromium-molybdenum steels. However, tests have indicated that heat-treated carbon steel can be substituted for the alloy-steels in many applications. Where maximum strength is required, molybdenum and other very low alloy steels will often fill our requirements. Former applications for nickel-chromium steels included transportation motor shafts and highly stressed generator parts such as clamp bars and bearing supports.

Zinc-coated sheet steel has been substituted for tin plate on ventilating fans in copper oxide rectifiers.

Cold-drawn normalized or annealed nickel-chromium and chromium molybdenum steels have been replaced by a carbon-manganese-sulphur steel.

Carburized and cadmium or zinc plated low carbon steel stamped parts have been substituted for aluminum nitriding steels in some switchgear.

Aluminum has been very widely used in many parts of Westinghouse products. Numerous surveys have shown some few applications such as aircraft radio parts and large turbo-generator wedges and certain castings in which substitutes cannot be tolerated, but intensive efforts have been made to design to substitute materials wherever possible. Replacement of aluminum used in the following applications is almost complete: all but the largest sizes of turbo-generator wedges, seal rings, coil supports, turbo plates, all sizes of motor blowers, explosion-proof motor frames and brackets, compression caps, lightning arrester and bushing caps, miscellaneous castings for switchgear apparatus, circuit breaker handles and shields, and switchboard panels. Substitute materials and methods include bronze (mostly silicon and manganese), malleable iron, fabricated steel, fabricated copper base alloys and cast iron. Wherever possible malleable iron or steel is being used. The saving in aluminum is about 50,000 pounds per month.

All chromium previously used in nickel-chromium alloy cast irons (except for heat resistance) has been replaced by molybdenum.

A hard-drawn, low-carbon uncoated wire has been approved as a substitute for tinned banding wire for temporary bands on motor armatures.

Fifty-four different Westinghouse shop sections before the war used tin in babbitts or solders for many

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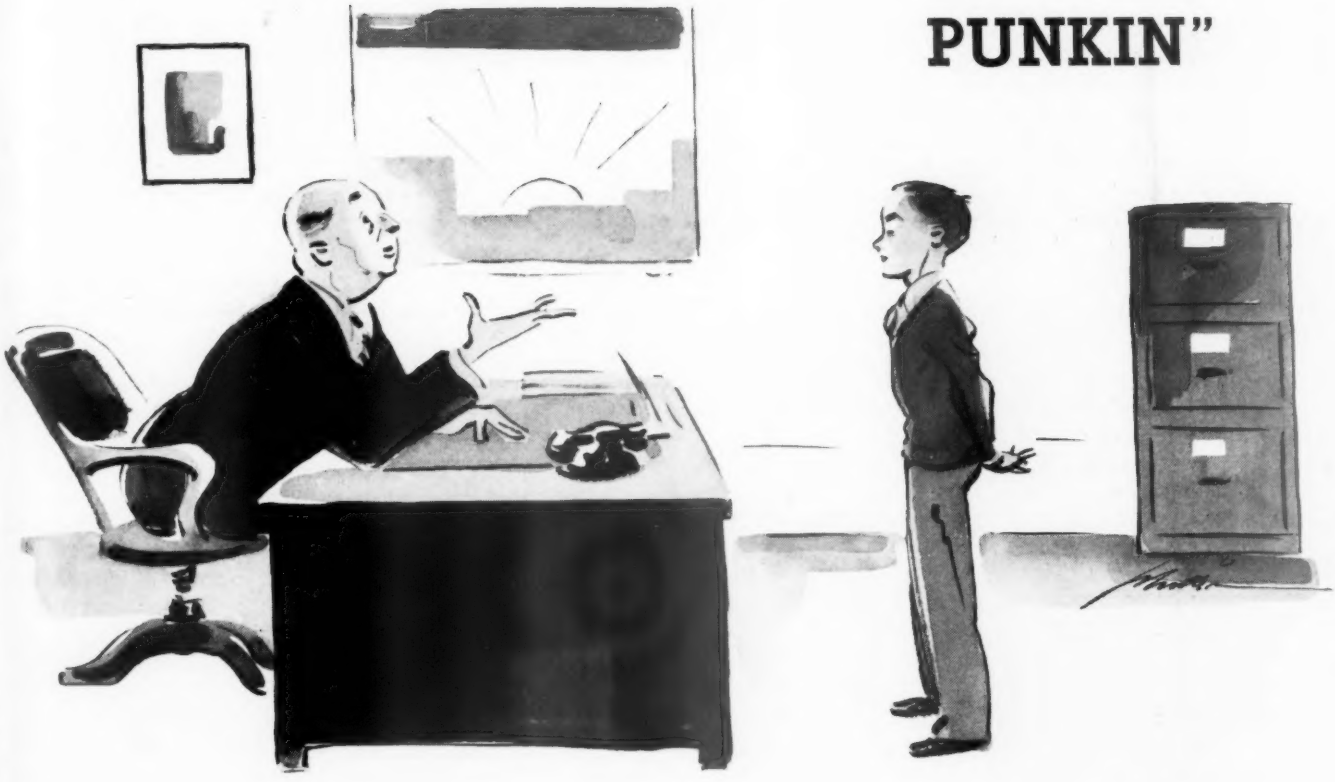
"Well, Miss Devine, I thought you said there was a gentleman waiting to see me."

"WHEN THE FROST IS ON THE PUNKIN"



Experience is one of the greatest assets of business, and management would do wisely to conserve it for loyal and continuing service

SOME people are just as queer as others, if not more so. A Purchasing Agent of my acquaintance, who is one of the best in the business, and who works for a fine house, remarked the other day: "You know the rule here, that every executive is automatically retired at 60. Well, I'm 59."

Now, what a piece of damphoolishness that is. That man has at least ten years' top speed work left. He's young for his years, has kept himself flexible, is universally liked for his competence and fairness. He is a well-nigh priceless asset for his company. But he expects to be retired at sixty.

Well, there's a war on. I'm game to take a bet that he'll stay right where he is, at least until Uncle Sam and John Bull and the Big Bear and the Chinese have thoroughly polished off the Huns and the Japs. This war is making a clean-up of the younger men; and the elders who are experienced and capable will be needed right where they are, "frost on the punkin" or not. Purchasing for a big house today is no kid's job; and, gray dome or shiny dome, if any house has a he-man Purchasing Agent, the heads of it better take several thinks before they pull off his shoes and turn him into the pasture. I know several first class executives going strong at over 80. They say Uncle Henry Ford isn't quite ready for the bone-yard yet.

No, this setting an arbitrary age limit for retiring is a confession that the boss has his system full of malarkey. There can't be any age standard of fitness. One man may be aged at sixty; another at the height of his powers. And Purchasing Agents are proverbially tough; they have to be. Of course, if a man has kept himself flexible, mentally and physically, retirement—if he has enough dough to keep the big bad wolf from nibbling at him—shouldn't scare him. But it ought to scare his house.

Purchasing Agents are often far too busy to have accumulated resources to enable them to keep fit when the daily pressure is removed. Without such resources, when the lid is lifted, a busy Purchasing Agent is likely to get a bad case of the bends, like a deep-sea diver who comes up too fast. And if, too, he hasn't been able to salt down enough coin of the realm to let him indulge his hobbies, it is just too bad. I don't think

★ ★ ★ ★ ★ ★ By CHARLES FORD ★ ★ ★ ★ ★ ★

any chief executive or board of directors can make arbitrary rules for such cases. One of the sanest outfits I know has a Purchasing Agent *emeritus*. He goes in every day, his old office is retained for him. Visitors are encouraged to see him. His successor is too broad-minded and too much of a gentleman to embarrass the old fellow in any way, and often asks his advice on questions where he needs the advice about as much as a dog needs two tails. But the Purchasing Agent *emeritus* is made to feel he is no forgotten man, and he is consequently content.

As my own pumpkin is considerably besprinkled with frost, I'm inclined to feel rather strongly on the subject. It seems to me, if I were an employer, personnel would be my most interesting subject. I would make it my business to know just exactly the personality and competence of every man, woman and child in the place. Even Indians not taxed, if any. If superintendent and sales manager referred to the Purchasing Agent as "that feller," I wouldn't feel that I was holding down my own job properly. But damn' few employers will admit, no matter what their age and decrepitude, that their own usefulness could possibly be impaired. The boss may dodder about, with cussing out the office-boys his only evidence of vigor, but he's just as good as he ever was, and what are you going to do about it? But let his sales manager, or his superintendent, or his Purchasing Agent ignore hair restoratives—that's another story. And, quite possibly, any one of the three is a better man than the boss ever was. The acquisition of money and stock majorities doesn't make a man, by a damned sight.

Preferred Assets

Some years ago one of our captains of industry was showing a friend over his plant. It was a darned good plant; he had inherited it, but had persuaded himself that he created it. The friend, being one of these hell-devil go-getters, remarked afterward over their cigars: "I notice what a lot of older men you have working here. I should think you would want to replace them with younger timber—young fellows quicker on their hinges, who can get out more work." Our captain of industry was shocked. "Why, Mr. Speed, I consider those older men one of our greatest assets. I feel proud to think that so many of them came here in my father's time. Maybe some of them have slowed a little, but I wouldn't want to lose one of them."

But here's one for the port side of the ledger. A few years later, this same captain of industry temporarily abdicated. It was never explained why, but a new executive came in. During this interregnum every one of the old boys was slipped out to take his chances. The captain of industry later resumed his job; but none of the old boys came back.

Cases like this furnish some excuse for the social security—so called—that complicates our tax accounts today. When a man has spent forty or fifty years in one place, earning a fairly good salary, he might be expected to accumulate enough mazuma to ease him smoothly down the toboggan slide of the years, without worrying about paying his bills.

But how many of them do?

When a man's children are growing up, he wants to spend reasonably, educating them and fitting them for their own place in the firing line. He likes to safeguard his family with a goodly lump of life insurance, so that if his car tries to climb a tree and incidentally splits open his skull, they may not suffer. Mother needn't work out by the day; Mary and Susie can have a decent chance to hook a young man apiece; Jimmy and Johnny can fit themselves for usefulness and begin their own climb up the ramp of business or finance.

Then, there may be sickness, and hospital bills, and the house needs paint and a new roof. Some of the invested savings are in stocks that go to pot and return neither principal nor interest. Strange to say, the captain of industry Dad has worked for so many years isn't as infallible as he thought he was; and things generally go to hell in a handcart.

When the blow-off comes, Dad is up a tree with the wolves yowling about the trunk.

This sort of thing happens too often in real life. Care and thrift and industry go for little, because fate intervenes and kicks the stuffing out of what was meant for a safe, sensible programme.

A Purchasing Agent grows up as his company grows up, lives reasonably, doesn't countenance any rivalry with the Joneses next door in the matter of putting on dog, saves a little money, and also goes on acquiring a little greater area of bald spot. The boss looks up as he enters the private office, and the first thing he sees is not the human being who has worked and schemed and thought and hustled for the good of the business, only a little but growing bald spot, or the waxing accumulation of gray hairs on his pumpkin. He doesn't sense that the rhythmic passing of the years has but added to the subordinate's store of wisdom and experience and competence. He thinks: "Poor Smith's beginning to look a little old. We shall have to think about that a little." The boss doesn't think he's cold-blooded. He thinks in terms of the business, which he bestrides with the authority that makes him infallible whether he knows what it's all about or not. Ignored are the years Smith has labored to help build the prosperity of the business. Smith has always earned a good salary—so what? He ought to be able to take care of himself.

That's one prime defect of the vast systems of corporate business that have gradually submerged the smaller concerns. Employees think in terms of salaries, not profits. Employers think in terms of dividends, and salaries are a necessary evil, so they are not encouraged at the expense of dividends.

But salaries are hard to get, and easy to lose. We all know what it takes to avoid living up to the last dollar of our pay-checks. The job will never be gone. The firm will never bust; and next year I'll begin putting something by. But the Joneses are active, and we have a hard time keeping up with them. And if our financial plans fall down in heaps, it's quite a struggle to worm out from under the heaps.

My dear Mr. Midas, Social Security should begin at home. When you pull together a big bunch of factories, making one huge structure loom where stood a huddle of huts, does it occur to you that you are assuming a sort of over-lordship that should carry with it the responsibility for the well-being of thousands? Where the boss of one of your constituent companies could know personally every Mike, Jerry or Mary in the place, do you see more than a mass of heads bowed to carry your loads? And what fraction of a damn do you care what happens to those heads or what goes on inside of them? Or if one or two or three get trampled in the crowd does anyone look back to see?

We have left it to a paternalistically inclined government to put out a so-called social security as a nice political move to attract votes; and you curse them for

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TOTAL CENTRALIZATION is no PURCHASING PANACEA

A thoughtful analysis of purchasing for state supported educational institutions discloses special conditions that suggest common sense decentralization of the purchasing authority

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PROBLEMS encountered in centralizing the buying for all of the agencies and institutions of a state have some aspects that are quite different from those of a municipality. Savings may usually be expected when similar requirements of various state institutions can be combined for larger volume. Also, economies usually result when higher quality standards can be specified without sacrificing the interests of any of the several state institutions which participate in the pool. There is, however, a tendency on the part of the average layman to advocate the creation of a central state purchasing agency without critically examining the matter. This paper is designed to afford some suggestions to those who may be interested in promoting the establishment of a central purchasing agency, but who are also interested in having centralized purchasing work to the maximum possible effectiveness.

Legislative provision for centralized state purchasing is the first step. As such, the drafting of the law itself is of sufficient import that it should be done most carefully with attention to certain pertinent factors. The law is the foundation and if the super-structure is to be adequate the basic legal provision must be designed with due consideration to the implication of special procurement problems.

Overpublicized Economies

Reports of some startling savings by means of centralized purchasing have led the public, which seems to have time only for that which is startling, to feel that all that is necessary to make a significant cut in the tax bill is to pass a law creating a state purchasing department. Some of these instances of savings are indeed amazing, but it is a mistake to project the anticipation of any such fantastic scale of savings to the purchase of all the needs of all the agencies of the state. A fair and unbiased "before and after" survey of any state where centralized purchasing has been accomplished will be all that is required to reveal that the *percentage* of saving on the *total expenditure* is no extravagant figure.

Purchasing department savings are usually not net savings. It takes a respectable budget to operate an adequate purchasing office and that cost must be deducted from the gross savings. Comparisons of prices paid "before and after" are often exhibited, but where lower unit prices are the result of price competition and lowering of quality the "savings" certainly are not all on the credit side of the ledger. Conversely where qualities *higher* than necessary are bought for the sake of standardization and pooling of various requirements there is likely to be some loss to some users.

Some state schools complain that the requirement to buy through the State Purchasing Agent precludes certain savings which would otherwise be available to them as members of the Educational Buyers Association through the Educational and Institutional Cooperative, or through other special arrangements.

Where schools are buying independently a surprisingly large proportion of their requirements is already being bought at the best available price because they have been under the compulsion of circumstances to make their funds stretch as far as possible and every economy has been utilized.

But *any saving* and *any* real raising of *quality standards* is worth the taking if the machinery of operation and the delay and red tape do not nullify the benefits. Those who are interested in real results as opposed to political propaganda will want to make adequate legal provision for conserving all possible tangible and intangible values, and the long term welfare of the various state institutions.

An industrial purchasing agent hesitates to talk about governmental buying in specific terms which may be required to undergo analysis. Governmental buying includes factors both as to procedures and as to diversification of requirements that are seldom encountered in any one unit of industry. Trying to forecast the possibility of using in governmental buying those practices which have become standard in commercial purchasing is extremely hazardous. One is likely to forget that a great proportion of business transacted in the office of an industrial buyer is by direct negotiation. The experienced buyer is in close enough touch with the market that he knows constantly where he is likely to find his best buy. That doesn't mean that he neglects to test other possible sources frequently but it does mean that he can do so informally and without resorting to advertisements for bids and delay while waiting for the date of bid openings.

Public Buying is Different

The industrial purchasing agent can and usually does, keep entirely confidential the prices quoted to him so that any bidder who wishes to express in his bids a greater loyalty to his customers than to his competitors may not be betrayed. The public buyer on the other hand would have difficulty keeping quotations confidential after the bids are opened and the order placed, even if he were permitted to do so.

Also, the industrial buyer, through management, can cooperate closely with the department using the material he is buying whereas the governmental buyer is sometimes unable to get on a cooperative basis with the user of supplies in some remote bureau, with the proverbial ten foot pole. In industry the ultimate goal is the profit motive but in government the aim may be anything from political skullduggery to high minded social service. The method of operation of purchasing agents of the larger independent universities resembles more nearly that of the industrial buyer than that of the typical governmental buyer.

Some will say that the answer to such problems in centralized state purchasing is to make the law air tight; to draw up an act that leaves no choice to the school administrator, or to anyone who spends public money, but to be "cracked down" upon. Such an attitude is predicated on the false assumption that any tax spender who might question whether the lowest bid represents the best buy, for the particular purpose, is a waster and ought to be curbed or kicked out. The compulsion used in industrial procurement is a different type of compulsion.

FOUR TYPES OF PURCHASES IN WHICH DECENTRALIZATION MAY BE THE BEST POLICY

1. **Emergency requirements**
2. **Expenditure of funds that are not derived from taxes**
3. **Special requirements that have no counterpart in other governmental agencies or institutions**
4. **Requirements that are primarily dependent on the local situation**

The mind of the taxpayer should also be cleared up about the matter of the effect of savings through purchasing economies on his individual tax bill. Certainly, the effect of such savings is all to the good, but he will usually look in vain should he expect to see them directly reflected in his property tax notice. The institutions and bureaus use such savings not to reduce their appropriations but to enable them to procure some of their needs which would otherwise go by the board. The savings may also sometimes be used to bolster up a meager salary scale. When the legislature makes an appropriation to a state school it does not appropriate so many thousand tons of coal and so many microscopes. It appropriates a sum of money or a millage rate which has been arrived at by various computations as the proper balance between the school's expressed need and the ability of the public pocketbook to provide. Seldom if ever is there much surplus to turn back at the expiration of the appropriation period.

The Question of Centralization

It is safe to assume that the people responsible for state institutions are apt to be as conscientious as the average of people anywhere and in regard to their special requirements they may be just as capable as anyone of deciding what purchase represents the best ultimate value return for the state's money. On many requirements the user is *better* qualified, as the State Purchasing Agent himself will readily testify.

In this paper the aim is to try to find a logical distinction between the areas wherein the State Purchasing Agent should be expected to operate to full effectiveness in centralizing, standardizing, specifying, and choosing the source, and, on the other hand, those areas wherein the needs and desires of the using agency should be the primary consideration.

There is enough latitude under the provisions of the purchasing statutes of most states to permit this, if the state purchasing agent and the officers of the state institutions are willing to cooperate. It will usually be found in such cases that a give-and-take attitude will show the best method of operation. However, we may attempt to analyze the factors in some of the situations where friction does occur, try to point out some basic causes of friction, and to avoid some of the difficulty at its source.

Politics

In most states where appointment of the state purchasing agent is not under civil service, he is essentially a political appointee. The State Purchasing Agent who demonstrates that politics can be kept out of state purchasing is to be highly commended. His tenure of office is apt to be affected by the changing political complexion of the state administration. This is apt not to make for good business nor for a completely business-like attitude on the part of that official toward his main job. The pressure toward political expedience is too potent a factor—an ever-present consideration. On the other hand such state institutions as the colleges are predominantly non-political. Distrust and resentment result when the exigencies of their daily operation and functioning are made the football of state-house politics.

Revenue not Derived from Taxes

Another fruitful source of difficulty is connected with failure to recognize that the schools themselves collect in fees a considerable share of the funds on which

they operate. These institutions are also the recipients of grants of money and gifts made for the specific purpose of purchasing equipment that is needed in certain research laboratories and elsewhere. Classes leave memorial funds and loyal friends make donations. Some divisions are completely or partially self supporting. In states having centralized purchasing, such monies are usually required to be forwarded to the state treasurer and the subsequent purchases made through the State Purchasing Agent.

Wherever the state officials recognize the nature of these transactions and accord to the school a just measure of latitude in specifying and choosing the source of the items for which this money is spent, little trouble results, but when there is an attempt to force the acceptance of unwanted decisions from without, the sparks begin to fly. School administrators feel that in cases of difference of opinion their wishes should be accorded something more than a nuisance value.

Every industrial purchasing man should be vitally interested in establishing the best possible methods for the expenditure of public funds. Here are some of the basic differences between public purchasing and buying for private industry, that must be taken into consideration for best results. Don't applaud the mere appointment of a state purchasing officer unless the legislative foundation is adequate and suited to the conditions under which he is to operate.

Authority and Accountability

The whole matter of dispersion of control is potentially more significant than is often recognized by the public. Members of boards of control, trustees, regents, etc., are elected or appointed to be accountable for the conduct of the various institutions. Colleges and universities especially are charges justifying the best available minds. It is a travesty to seek out and press into service without pay the men who are most competent to direct the policies of these institutions and then to clip their wings by depriving them of their power to determine certain significant matters of operation. Accountability only goes with authority. Remove the authority and you relax accountability. The most able men are not likely to be continuously available for rubber stamp service.

The same principle applies to the availability of the best talent for service as paid officials and administrators, and the same relaxing of accountability for their actions applies, if the power of administration is partially removed.

Competitive Bidding

The watchword of governmental purchasers is competition. The pressure on the part of would-be suppliers to sell to the state has operated to boost the principle of affording competitive opportunity, up to a status of a Magna Charta of government buying. It has even pushed into a secondary place the rights of the governmental agency, which has to use the material! The desperate pulling and hauling of competing firms trying to get a larger share of the state's business has given the governmental buyer a complex which impels him first and foremost, when he is about to make a large purchase, to build an unassailable hedge against the possible future charge of some taxpaying dealer that he wasn't given a fair chance at the business.

This hedge usually takes the form of advertising for bids. When the State Purchasing Agent advertises for bids on an item, no dealer can complain that he didn't get a chance to submit a proposal. It is supposed to be his own fault if he didn't see the ad. There is no wish here to quarrel with the practice of advertising for bids in the newspapers except that it simply is not effective in obtaining the best proposal. The better sources are not likely to be scouring the ads for prospective business. Their attention has to be definitely called to the impending purchase in some other way. The cost of advertising and the time required are very nearly a total loss.

Conventional governmental purchasing has heretofore recognized only one degree of competition. The rule may be stated somewhat as follows: Draw up a complete set of standard specifications for every requirement, take plenty of bids, require surety bonds from the bidders, inspect the samples, disqualify all offerings not equal to the specifications and then of those remaining accept the lowest bid. Now let us look at that dogma rather analytically.

There is no doubt that for the procurement of many items the standard specification and bidding procedure is entirely satisfactory. For such supplies as cement, paint, floor oil, soap, etc., there are available adequate standard specifications. Moreover, there are usually plenty of potential bidders representing satisfactory sources. But there are also many classes of items of which this is not true. Office equipment, automobiles, laboratory apparatus, tools, machinery, to mention only a few, are the types of requiremnets that can not be adequately bought on anything resembling open competitive specifications. When something of this kind must be bought it is a matter of looking over the field of offerings of different makers, and distributors, each with its own set of features and selling points, and deciding which represents the best value for the particular requirement at hand, at the respective prices quoted. Your typical government buyer will say that in such a case one make will probably be specified by name and number with the saving specifications "or equal". Thereupon the fulcrum where the leverage is applied immediately becomes the qustion: What is an acceptable equal?

If the best make of duplicating machine for a particular purpose is specified it naturally follows that there will be *no effective equal.* Thereupon the whole point and purpose of conventional competitive bidding falls down. If, on the other hand, the specification is opened up to other less acceptable machines there will hardly be a "child's chance" that the best one can be bought if the low bid must be accepted. Either the government doesn't get the best or else the orthodox competitive idea is badly mangled.

Degrees of Competition

Recognizing this basic weakness of the customary competitive procedure in governmental buying, we look about for an effective alternate approach. It is suggested that legal provision be made for (a) the use

of a *general* specification on such non-standardized items, and for (b) plenty of latitude for selecting by evaluating *comparatively* all of the factors, features and services of the various offerings as to which represents the *greatest ultimate value* for the particular purpose at the respective prices quoted. Moreover, this philosophy, called the "theory of competitive worth", recognizes the fact that a product that is *better* than the standard which has been specified may be a better buy at a little higher price than a lower priced article which just barely meets the minimum requirements.

Still another degree of competition is easily discernible. It is typified by the requirement wherein such factors as safety or regard for good taste or availability of service, must take distinct precedence over any consideration of competitive quotation and over the right of dealers, one and all, to bid. Many dealers may sincerely protest that they sell an oil that will properly lubricate the bearings of a costly turbo-generator but no sane person will question the astuteness of an engineer who persists in being on the safe side by specifying and insisting upon a brand of lubricant which he *knows* to be safe. Lastly, the theorist who claims that adequate open competition specifications can be drawn for any and every thing might try drawing up a set of specifications for a complete outfit of furnishings for a dormitory whose architecture is of the Italian Renaissance period, which when bought on low bid will satisfy a competent authority on interior decoration!

A recognition by all interested parties that there are other kinds of competition than standard specification competition, and that there are rights accruing to the state and its agencies which the rights of vendors to compete must not be allowed to nullify, would contribute to a more healthy buyer-seller relationship. In those states where the Purchasing Agent recognizes these facts and acts accordingly, school officials required to buy through his office do not suffer, but in others they chafe at the difficulty they encounter in trying to obtain those particular pieces of equipment which would permit them to hold their rightful places in the world of education and research.

Geographical Problems

Usually, in a completely centralized system of state purchasing, if some of the state institutions are situated at a considerable distance from the city in which is located the office of the State Purchasing Agent, the dealers in the vicinity of such institutions get little consideration in the awarding of orders. These dealers do not see the bidding lists and they are apt to have a very sketchy acquaintance with the involved procedure of obtaining state business. Nevertheless, on many requirements they may be more advantageously situated to render service to the nearby institution than some big jobber in the distant capital city.

The time element in serving outlying institutions is an ever present consideration. Certain contingencies cannot be anticipated sufficiently in advance to permit of an adequate job of procurement by remote control. It therefore sometimes happens that the use of emergency privileges is a cause of misunderstanding. The state purchasing agent occasionally suspects that the emergency privilege is being used as a subterfuge and on the other hand the school administration tends to resent his suspicions.

Sometimes an effort is made at resolving the difficulty by establishing a value limitation upon the institution's authority to buy. All purchases less than $100 or $500 or some other arbitrary figure, may be made by its local officers. This device is a rather lame attempt at rationalization. The real considerations involved should not rest upon any such basis. To use it invites subterfuge and misplaced emphasis. More effort is likely to be expended in splitting up a unit of need into orders that will not exceed the limit than upon the proper selection of materials and sources.

Finding the Practical Answer

In what practical ways are these problems met in states which have centralized purchasing that includes the institutions of higher learning?

Usually, soon after the system has gone into operation there begins a process of *de*centralization and of delegating partial authority back to the institutions. First the emergency requirements are authorized, then some of the items bought from income other than taxes, then many of the miscellaneous special requirements that have no counterpart in other institutions, and finally there is a tacit recognition that those on the ground are better qualified to select many of the requirements than someone who is not acquainted with the local situation.

This pragmatic process of finding out what works best continues until a workable balance is achieved and then, should the state administration change and a new state purchasing agent be appointed, for a while the administrators of the institutions do not know where they stand with regard to their purchasing.

Personnel and Procedure

Civil service requirements may have raised the standards of qualification for appointive officers in many state governmental agencies but as civil service affects positions in the higher brackets of executive rank, it does not always produce the desired result. Perhaps civil service tests do not always indicate the best executive ability. Perhaps there is no charted procedure to assure the state securing *and keeping* the best available men for a state purchasing department, regardless of politics. But if there be such, the aim must be (1) to give assurance of an efficient and capable staff and line personnel under a fully qualified Chief who is not beholden to any political affiliation, (2) assurance of reasonable tenure of office but a corresponding certainty of swift corrective of any lack of effectiveness or any lapse of integrity, and (3) a continuity of well worked out purchasing policies and methods of procedure.

The establishment of an independent non-partisan State Board of Purchases, while it would not insure the abolishing of politics in purchasing, would afford a means of doing so if an effective intent were present. The members of such a board would be appointed for a definite term with the terms staggered. The board's functions would include (1) the establishment of definite purchasing policies (2) the selecting of State Purchasing Agent and the confirming of his chief assistants, and (3) to be the court of appeal as to whether the Purchasing Agent was performing his function effectively and within the established policies.

Good purchasing implies adequate testing and inspection. Many requirements can be bought right only after exhaustive tests. To set up an elaborate system of procurement and obtain the services of a qualified staff and then fail to provide for critical and expert inspection of the goods that may be delivered on the various important purchase orders, is highly inconsis-

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HOW to PURCHASE BOOKS

Requisitions for technical, trade and reference books are coming to the Purchasing Agent's desk with increasing frequency in these times; here are some practical suggestions on efficient ways of handling such requirements

By CHARLES R. BROCKMAN

JUDGING from inquiries and orders received by most large book stores, the buying of books gives many Purchasing Agents a headache all out of proportion to the amount involed. This is because one of the strangest of all paradoxes exists in the field of book buying. From surface appearance it would seem that books constitute the world's easiest commodity to buy; they can be bought in almost any block or automatically through book clubs. The buying of a definite book, not on the current best seller list, goes to the other extreme. The bookseller is no more likely to have the book you want than a druggist is to have a complicated prescription already compounded, nor can the bookseller make a book for you.

Many Purchasing Agents are finding this true for the first time as requisitions for books arrive from individuals who seemingly never before knew that books existed. Increased and unusual demands for new information created by the war have multiplied the need for books many fold. This is especially true of technical books and others not likely to be stocked in bookstores. When victory has been achieved, it is not unlikely that the discovery of books as friendly aids to work and recreation will be one of the chief rewards for many individuals.

There is really no reason why the buying of any book, no matter how uncommon, should create the costly confusion which now tends to discourage the use of books in general. All that is required is a general understanding of bookselling and library procedure.

For instance it is seldom necessary to write hither and yon for a quotation on books. If no bookstore is convenient, telephone the nearest public library. Ask the list price of the book you want to buy. Most bookstores and libraries have consolidated book catalogs, with prices. Giving you this service is what libraries are for. Live booksellers will welcome the opportunity to demonstrate their service. The library will also give you the name and address of the publisher to whom, as a last resort, the order may be sent.

The most troublesome of all requisitions are those for a book to supply a certain need but with no definite title given. If such requests are for dictionaries, synonyms, letter writing or other commonplace books, the bookseller can and will offer sound advice. Requests for unusual technical books should be returned to the person responsible for the requisition with a suggestion that a definite title be named after consultation with the local bookseller or library.

If you buy many books it won't pay you to deal with various publishers. Most of them in turn, would prefer that you do not, since they are under some obligation to supply the trade through dealers. Another reason is the excessive cost involved in opening accounts and paying bills to a number of publishers.

Therefore, the best procedure is to select a dealer who is qualified to supply the kind of books you need

and willing to grant prices as low or lower than others. Since bookselling is a cross between professional service and merchandising, with emphasis on the service angle, the matter of choosing a dealer should be gone about in very much the same manner as the selection of a physician, lawyer or architect.

Qualifications for Service

Bookselling qualifications like those of any other profession are measured by location, experience, equipment, specialties, and character. In the case of a bookseller these factors are represented by size and nature of his stock; specialty, if any; but more than anything else by the possession of "tools of the trade" and skill in their use. These tools consist largely of bibliographies and catalogs of various kinds.

Gauged by these standards there are some excellent book stores in many towns and cities. On the other hand there are wide territories, including some sizeable cities, with no booksellers worthy of the name. In the selection of a dealer, libraries can be helpful since they can usually furnish the names and addresses of local booksellers, those in nearby cities and in New York. Letters of inquiry should be addressed to one or two dealers in each group. These letters should give some idea as to the extent and type of books purchased annually, inquire about facilities for handling orders and discounts, if any.

The location of the dealer selected isn't very important since many of the books wanted will have to be gotten especially to fill your order. If there is a well equipped local bookseller, he can order your books and deliver them to you by messenger about as quickly as anyone else. In the absence of a local dealer, those located in New York have an obvious advantage because New York is the center of the book publishing industry. When New York dealers do not have books in stock, their messengers pick most of them up from publishers or wholesalers and mail them on the day the order is received.

If purchases are restricted to books falling within a definite classification as "medical", "legal", or "religious", arrangements should be made for buying exclusively through specialized book stores, though these are few and far between. Otherwise a general book store is in a better position to meet all book needs.

Special Problems

Second-hand books form a problem to publishers corresponding to used cars in the automobile industry. Publishers, naturally, would prefer that second-hand book stores did not exist. On the other hand many book buyers find their money goes much further when spent for second-hand books. Books are, after all, a "durable" commodity. Their rate of depreciation is slow both physically and as to content. Except for gift purposes, a clean second-hand book is worth as much as a new copy. For this reason dealers in used books have an advantage over dealers in new books exclusively. Used-book dealers are also more likely to have books that are no longer available from publishers or to have methods of finding them. The second-hand book dealer's usual practice is to supply as many second-hand books as possible at a low price and to complete orders with new books.

Dealers' policies in regard to giving discounts to business firms differ. Some do and some do not. Theoretically business libraries are consumers and, as such, not entitled to dicounts. Practically, as with other commodities, purchase volume is frequently sufficient to justify a discount. A few dealers grant discounts when assured of continuous volume. If a considerable number of copies of any one book are desired, some discount should be expected. When only one copy of a title is needed, the matter of discount is secondary to that of the service rendered in procuring the book promptly.

When a dealer has been selected on the basis of replies received from inquiries, he should be informed that he has been selected as agent or dealer, very much as an industrial firm would place certain problems in the hands of an architect or lawyer. If necessary, a definite check as to prices can usually be made at intervals through the library as has been suggested.

Facts About the Book Trade

The reason for most of the foregoing suggestions will be apparent when the following facts are understood.

(1) The largest bookstores carry hardly 5% of the available books and certainly not more than 10% of the books you are likely to want. Hence your dealer will have to obtain most books especially to fill your order. If he is "up-and-coming", he will save time by having the books mailed direct from the publisher to you.

(2) A book may be temporarily out of stock with the publisher in which case there is nothing much that can be done until the publisher prints some more. The larger the bookseller's stock, the more likely he is to have copies, even though the publisher is out. This is especially true of dealers who handle second-hand books.

(3) The book may be permanently out of print which means that the publisher has no more copies and does not expect to publish more. In that event the bookseller will advertise for a copy, usually at no cost to you. The process as a rule, requires several weeks. If the book is scarce, the price the dealer is required to pay may exceed the original price. If so, the dealer will quote you before buying the book for your account.

(4) The book may be published by some Association, Institution, individual or the government, which allow no discount to the bookstore. In such cases the bookseller must handle your order without profit to himself or add a small service charge to the publisher's price.

(5) Discounts of publishers to booksellers range from 10% to 20% on text and technical books and 33⅓% to 40% on fiction and other "trade books". These margins account for the fact that dealers can seldom allow a discount on single copies, many of which must be ordered especially—a process involving many costly details.

(6) While a few publishers encourage orders direct to themselves, most publishers prefer that books be ordered through dealers.

(7) Some publishers who conduct a direct-by-mail business in their own books can afford and frequently offer to send books on approval because on such books they receive both the publishing and bookselling profit. This is a privilege bookstores can seldom allow.

The best way to buy books, therefore, depends on the selection of a dealer as your source of supply. Let him worry with the details. He knows that all knowledge finds its way into print sooner or later. He knows that as rapidly as knowledge finds its way into print it is catalogued and indexed in professional library and book trade "tools," so that almost any part of it can be located and obtained quickly to fit individual needs and tastes. He is equipped with many of these tools and skilled in their use. It is his business to deserve your patronage through a happy combination of buiness acumen and professional skill.

BASIC PRINCIPLES of PURCHASING

III. QUALITY FACTORS IN BUYING

THE generally accepted analysis of factors considered by a buyer in making a purchase groups these factors under three main headings—quality, service, and price, in that order of importance. It has been suggested that quality and service should be combined as a single consideration, since the service rendered by the producer of a machine tool or similar equipment, for example, may actually be the determining factor as to the quality (in the sense of usefulness to the buyer) of that equipment. This effort to simplify the analysis is not altogether well taken, for the example cited above does not apply with equal force to other types of purchases. A supplier may give valuable service in adjusting a new material, or a new type or grade of material, to the manufacturing process, so that a quality heretofore unsuitable becomes satisfactory or even standard for use. But once that adjustment has been made, the particular material or grade—i.e., quality—is altogether independent of the service factor. Servicing of office machines is quite generally handled as a separate contract with organizations specializing in this type of work, rather than relying on the supplier. A dealer in perishable foodstuffs may agree to replace any produce which is found to be spoiled; that is excellent service, but does not improve the quality of the produce.

On the whole, the subject is clarified by viewing these two factors as separate considerations—quality being a characteristic of the product itself, and service a characteristic of the supplier. Both are important in deciding what and where to buy.

The Primary Buying Motive

As to the primary importance of the quality factor, there can be little question. If the material purchased is not suitable for the intended purpose, it represents a poor purchase, and neither the ultimate in service nor the most favorable price agreement can alter that fact. In the lexicon of purchasing, quality is defined in terms of suitability and adequacy.

A very helpful study in this connection is the analysis of buying motives made by Prof. D. J. Duncan of Northwestern University, and published in the summer issue (1940) of the *Harvard Business Review*. Prof. Duncan's study covered four hundred representative purchasing departments, the buyers being asked regarding the motives which had determined their purchasing decisions. It was designed to develop the answers to such questions as: Do buyers of individual goods base purchases on logical reason, cold judgment, or on emotion? What industrial advertising appeals have the greatest influence? What general influences cause a decision to buy or not to buy at a particular time?

In analyzing the replies it was seen to be desirable to classify them in two ways, making a distinction (1) between Product Motives (what to buy) and Patronage Motives (from whom to buy), and (2) between three types of purchases: Heavy Machinery, representing a one-time purchase for use over an extended period of time, at a considerable capital expenditure; Raw Materials, repetitive purchases of material to be fabricated and incorporated into the company's own product; and Supplies, repetitive purchases to be consumed in the company's operation. It will be recognized that each of these cases involves some considerations of a special nature, not pertinent to the purchase of goods in the other groups.

A summary of the replies, in order of frequency, is shown in the accompanying table. The term "Quality"—significantly qualified as "Right Quality"—appears only twice in this table, each time at the head of the list, but it should be noted that the great majority of the terms used in describing the Product Motives are actually descriptive of different aspects of quality—productivity, dependability, and durability of equipment; uniformty, dependability, and purity of materials; dependability, uniformity, economy (of use), and durability of supplies. All of these are distinctly quality

factors. And the reliability of the seller which is cited as the leadng Patronage Motive in all three lists, has also a strong bearing on this same point as an assurance that quality will be as represented.

The cost factor is represented, in the broad sense, by such replies as economy and time or labor saving characteristics of equipment, durability and economy of equipment and supplies. Low prices, as a factor of cost, are relatively well down on the list in every case. And quick delivery, which is generally regarded as the measure of service, is surprisingly relegated to fifth place, presumably on the reasoning that a proper scheduling of purchases can compensate for longer requirements of delivery time, whereas the other factors are inherent, outside of purchasing influence or control.

Quality is Measurable

Quality is a measurable factor. It is measurable in a variety of ways, depending on the type of goods under consideration. Some of the more common methods of measurement are as follows:

By analysis. The composition of an alloy, the formula of an ink or cleaning compound, the strength and purity of a chemical substance, the sulphur and ash content of coal, and scores of similar examples may be cited as elements of quality which have a direct relation to utility and value, and which can be accurately determined in the laboratory.

By physical test. The tensile strength of metals and fibers, bursting strength of paper, dielectric properties, elasticity, ductility, opacity, folding strength, resistance to abrasion or shock, resistance to sunlight and weather, are among the many properties which can be measured in terms of standard and comparable units. Ingenious testing machines have been devised for their accurate measurement and accelerated tests under controlled conditions to simulate the effects of use over long periods of time. Frequently the tests of such properties are more important than the basic chemical composition. For example, a special alloy may be prepared to provide particular characteristics of ductility or hardness; to the buyer, the effect rather than the means is the essential consideration, and a measurement of the desired proprties may be a more direct and positive assurance of satisfaction than a chemical analysis.

By dimension. Precision measurements of finished parts within stated tolerances, the thread count in a woven textile, the thickness and uniformity of a leather belt, are quantitative measures whose significance may be even more closely related to quality (in the purchasing sense) than to the quantity in which they are expressed.

By performance. As suggested above, quality standards are primarily important because of their effect on performance or use. Frequently it is more practicable to measure this performance directly rather than to take the intermediate step of measuring specific properties which may be expected to give the desired results. A piece of complicated machinery, for example, could be defined in terms of dimension and design, specifying the component elements of each part. But the important consideration is its performance, or output. That becomes the best measure of quality, and is the factor which becomes at the same time the goal and the responsibility of the machine builder under a proper specification. Similarly, a paint can be described in terms of its composition, covering and wearing properties. But the essential thing that is bought is the finished painted surface; properties such as the ease of application and how it will stand up under given conditions of use may have a greater effect on ultimate satisfaction and cost than the purchase price of the material itself, and could well be made the basis of the buying description and test. As a general rule, it is good purchasing policy to advise the supplier or bidder as fully as possible of the specific use for which his product is intended and the performance which it is expected to give. It is not a mere happenstance that the "use specification" has become increasingly popular as a method of defining and measuring quality.

Quality is *not* measured *by price*. The old adage that "you get just what you pay for" is a half-truth whose dangers and shortcomings have often been demonstrated by the hard and costly method of experience, and which must be accepted only with the modifying influence of careful and objective judgement. Under competitive conditions, variations in quality tend to be reflected in varying prices for a product, but this is the broadest sort of generalization. Unlike the absolute standards of physical and chemical measurement, price is a volatile unit, subject to many influences in the fields of economics and psychology, relative efficiency and need, and in the value of money itself. Price may conceivably be a measure of value at any given time, but it bears no fixed relation to quality. For this reason, in the chronology of purchasing, quality is the first consideration, and on the basis of this measurable factor, relative price advantages are considered along with other variable commercial factors.

The Right Quality

Every one of these measurements presupposes that quality is available to the buyer over a considerable range—from a high or superior quality at one end of the scale to an inferior quality at the other end. It does not follow that the purchaser is interested primarily in obtaining the product measuring up to the highest standards in respect to the various properties involved. He is interested in securing the *right* quality for his purpose. It is probable that the minimum requirements of this suitable quality will lie somewhere in between the highest and the lowest qualities available. There are instances, however, when the lowest grade will be entirely adequate, and other instances which would justify every effort to extend the upper range and to seek improvements to enhance even the highest quality. Technological developments such as the science of alloying metals, for example, are spurred by this constant search for superior and special purpose materials.

To purchase materials or products which are either not good enough or better than necessary, represents potential waste. The classic example of this concerns the common business requirement of paper, which is used for a wide variety of purposes in ordinary commercial practice. At one extreme, if we are dealing with a form for a pencilled memorandum, going from one desk to another within the same office and tossed into the waste basket as soon as it has been read, it is obviously unnecessary to concern ourselves with high percentages of rag content, brightness of color, fine writing surface, folding or bursting strength, permanence, and similar properties. Every cent expended for superior quality under such circumstances is wastefully expended. But if we are dealing with paper for important documents such as deeds or contracts or basic records, which must be kept for long periods of time or are subject to much handling, these properties become very important indeed. We can not afford to use a paper which will disintegrate in the files, break apart at the folds, or render the entries illegible. Failure to secure the utmost in available quality for the preserva-

ANALYSIS OF BUYING MOTIVES

PRODUCT MOTIVES

	Heavy Machinery	*Raw Materials*	*Supplies*
1.	Economy	Right quality	Right quality
2.	Productivity	Uniformity	Dependability
3.	Dependability	Dependability	Uniformity
4.	Time or labor saving	Purity	Economy
5.	Durability	Ability to increase salability of user's product	Durability

PATRONAGE MOTIVES

1.	Reliability of seller	Reliability of seller	Reliability of seller
2.	Cooperation	Continuous supply under all conditions	Continuous supply under all conditions
3.	Low prices	Accessibility of seller	Accessibility of seller
4.	Quick repair service	Low prices	Low prices
5.	Past services rendered; satisfactory relationships	Quick and reliable delivery of of product	Quick and reliable delivery of of product

tion of these records is the poorest sort of economy, for there is the ever-present hazard that the dollars and cents ostensibly saved on the purchase price may lead to serious loss, not only in the monetary sense but to an extent not even remotely measurable in financial terms. To carry the example a little farther, the business will normally have a variety of requirements which fall somewhere between these two extremes or present special-purpose factors affecting the "rightness" of quality in the papers to be selected—executive correspondence where appearance and character of the sheet do much to create an effect of solidity and prestige for the company, sales literature designed to carry a particular impression or to capture attention, interoffice correspondence and working forms which receive a moderate amount of handling and are retained for a limited time, shop tickets which must stand up under brief but severe handling and withstand the effects of grease and grime, papers to be used with various printing processes, mimeographing, spirit duplicating, etc., each presenting special necessary surface qualities, and the like. The list could be extended to considerable length, and the basic principle can be applied to a wide range of materials in common use.

The initial selection of right quality, therefore, involves two steps. The first and most important is to define the minimum standards of quality suitable for the purpose, the point beyond which superior properties may be desirable but not essential. The second step is to balance that quality with other factors such as price, workability, durability, convenience, and commercial relations, so as to determine the most favorable purchase without moving down along the quality scale. Since value as a relative matter, and ultimate economy is a compound of all these factors, it is altogether possible that good practice will dictate moving upward along the scale, and the final balance of judgement will indicate that the proper purchase, representing the right quality to procure for our purpose, will be somewhat above the minimum quality measurements that might be set on a purely utilitarian basis.

Defining Quality

Having determined the right quality to buy, the purchasing department makes it a matter of record by establishing an ordering description of each purchased item, which will set the minimum quality requirements, insure that the supplier understands exactly what is wanted, and provide a means of measurement or test to insure that deliveries meet these requirements. There are various ways of expressing this definition.

Brand Name. The easiest method, though not always the most satisfactory, is to accept a recognized brand name which represents a supplier's overall description of his product, including an implied warranty of certain quality and performance standards, and uniformity, plus certain intangibles such as workmanship and reliability. From the purchasing viewpoint, it has the advantages of simplicity in ordering, normally well organized distribution and consequently ready availability, and the fact that elaborate inspection and tests can often be eliminated since the delivery of the specified brand fulfills the obligation of the contract and it may be assumed that the quality implications which are tied up in the brand name have been observed.

The effectiveness of this method, of course, depends entirely on the integrity of the supplier and what his brand name stands for. In this connection it should be noted that a manufacturer's brand name, where the details of production control are directly under his own supervision, is a more reliable instrument than a distributor's or "label" brand, in which the actual production may be in any one of several supplier plants and production control one step removed. This and similar considerations should be given the closest attention in determining the extent to which reliance can be placed on a trade name designation.

In general, when dealing with firms of established

reputation and good standing—and good purchasing aims always to deal only with reliable suppliers—trade marked products reflect the integrity of the maker, for the trade name is one of his most valuable assets. He has embodied his whole business reputation in that name which is indentified with the company itself, and has made acceptance of the name one of the primary objectives of his promotional and marketing efforts. Incidentally, the acceptance of that trade name by executives and operatives in the using departments—whether on the basis of hearsay, prejudice, or favorable experience—is a potent force for good interdepartmental relations and better utilization of materials. Whether by accident or design, operators seem to do better work and get better results when working with materials in which they have confidence, and consumer acceptance of finished products may be enhanced by the use of known components. This, of course, is a situation subject to many abuses, and to accept it unquestioningly as a determining reason for selection of supplies and materials is a negation of good procurement and the purchasing function. The best foundation for acceptance is (1) adequate and dependable quality, (2) confidence of the operating departments in purchasing judgement and service, and (3) a constant process of education in the application and use of materials. It is a problem calling for the most intelligent and persistent efforts of the purchasing officer, and complete cooperation on both sides. It is worth serious mention here because there are many well authenticated examples of sabotage resulting from prejudices or worse, and many cases in which purchasing judgement has been misled by faulty application of purchased materials or unfair tests of proposed substitutes.

The greatest shortcoming of purchasing according to brand name is the fact that such a policy tends to restrict the buyer in the selection of sources of supply, and to eliminate the competitive element. That is sometimes unavoidable, as in the case of patent or license monopolies. But most types of materials and equipment are available in comparable quality from competitive sources, a buying factor that can not be overlooked. When it is desirable, for convenience or any other reason, to use a brand name as the descriptive term for a company requirement, prudent purchasing practice overcomes this difficulty by adding the phrase "or equal", which opens the door to competition by demonstrating that this condition can be met. It involves the responsibility on the part of the purchasing department to determine that the proposed alternative is actually equal to or better than the specified brand, and it frequently requires the formal endorsement of executives in the using department as being equally satisfactory, as indicated in an earlier chapter. That it is perfectly practicable, and commonly accepted practice, is shown on thousands of lists of "approved sources" in industrial purchasing departments, and in studies showing that brands or sources specified on requisitions are frequently disregarded by purchasing agents with entirely satisfactory results in the use of the alternative "equal" materials.

By sample. The actual description or definition of quality is sometimes avoided by inviting prospective suppliers to match a sample submitted by the buyer. This is the lazy buyer's method. Unfortunately, the apparent saving of effort in the first instance may be more than offset by the necessity of inspection or test to see that the delivery actually does match the sample, and no definite standards are set. The practice can be justified only in the case of special, non-repetitive items, or when absolute quality is not a significant factor, or when the size and importance of the purchase does not warrant the effort and expense of formulating a more definitive buying description. It may, however, have a perfectly legitimate use in respect to particular aspects of quality, such as matching a sample *for color* or for some other property.

By Market Grades. The commercial description of many materials is simplified by the fact that marketing practice in the trade recognizes certain grades or classifications, which represent well defined qualities that are measurable and are understood by the buyer and seller alike. In the language of the raw cotton market, for example, we find middling fair, strict good middling, good middling, strict middling, middling, strict low middling and low middling; white, extra white, or spotted; and the length of staple measured to the thirty-second of an inch. Put these factors together in the ordinary market classification, and the result is a complete description of the desired quality. In the naval stores market, we find gum rosins graded according to color and purity as B, D, E, F, G, H, I, K, M, N, WG, WW, and X. Petroleum products are closely graded according to specific gravity and flash point. Food products such as nuts and prunes are graded by size, sometimes designated by a comparatively simple numerical system, and in other instances offering a fantastic array of grade names that have grown up over many years in the trade, such as Jumbo, Large, extra Fancy, Fancy Large, Extra Fancy Large, Medium, Baby, Ne Plus, Nonpareil, Peerless etc., etc.

This obviously presents a problem in vocabulary, particularly when the buyer's activities cover a broad range of products, but it does provide an accurate descriptive terminology that has specific meaning in the respective trades. Since buying and selling are done in the same markets, such established trade customs are the rules which must be observed. There are obvious advantages of availability, regular marketing channels, comparability, and competitive sources, when buying in terms of standard market grades.

Standard Specifications are Available

In addition to the methods described above, there is of course the possibility of preparing a description covering the essential quality factors of a material or product. A formal description of this nature is known as a specification, and is one of the primary tools of purchasing. It may set forth the requirement in terms of chemical composition; physical, chemical, and electrical charcteristics, materials and methods of manufacture; performance; dimensions and tolerances. As a purchasing device it may go beyond this phase of definition, setting forth the place and manner of test or inspection to be employed, the type of packaging required, and similar factors.

The practice of buying on specifications has gained wide acceptance in recent years. If it were indiscriminately used, with each purchaser developing his own specifications, differing slightly in detail, the danger would be that all industry would be placed on a special order basis instead of permitting the mass production methods which are the characteristic of efficient production. As a matter of fact, it has worked in the other direction, and has been a great force for standardization. The typical specification is developed jointly by users and producers, usually under the guidance of an appropriate governmental agency or technical society as the coordinating medium, and the resulting description

represents a grade or class of product adapted both to general satisfactory use and to economical scientific manufacture, in a range corresponding somewhat to the commercial grades of raw materials cited in the preceding section.

Among the agencies that have actively sponsored the development of industrial standards in specification form are the National Bureau of Standards, the Navy Department, the American Standards Association, American Society for Testing Materials, Society of Automotive Engineers, American Society of Mechanical Engineers, National Electrical Manufacturers Association, and similar bodies. They have provided, in their respective fields, a large body of technically sound specifications covering the majority of basic requirements and extending into the field of manufactured products, with practical and appropriate test methods, available to all industry, a matter of official record, and readily indentified by numerical or other symbols. There are complete directories of such specifications available, including also the specifications developed by large industrial organizations such as the Westinghouse Company, which are adaptable to general use.

Specifications of this sort are as easy to use as brand names, and are more accurately descriptive. Since they have been widely adopted as industry standards, they have the same commercial advantages as market grades, in that they have become the language of their respective industries, are understood by buyers and sellers alike, and represent materials that are readily available on a competitive basis. One of the great advantages in seeking sources of supply on any requirement covered by specification is that the bids are directly comparable on the basis of equal quality.

A recent development that emphasizes the usefulness as well as the flexibility of specifications in manufacture and in buying, is the promulgation of the "National Emergency Steels,"—a limited range of alloys recommended for these days when alloying elements must be conserved for essential war uses, but corresponding in general to certain groups heretofore specified and in common use, and recommended for alternative use in place of designated standard steels. In the field of manufactured products, a similar development has been the preparation of specifications for "Victory models" which define the limitations of design and materials made necessary in wartime.

Writing a Specification

For those requirements of a special nature, varying to a greater or less degree from the standard specifications available, or applying to manufactured products of a special or complicated nature, specifications are prepared in the buyer's own company. The process of building a specification is best undertaken as a group project, correlating the viewpoints of the engineering or design executives who have the ultimate responsibility for the adequacy of the product, the production executives who have the responsibility for using the material and building the product, and the purchasing executives who have the responsibility of procuring materials under the specification.

The two basic requirements of the specification—so obvious and elementary that they may be overlooked—are (1) it must clearly and definitely state what the purchaser desires, and (2) it must inform all concerned as to what means the purchaser will use in determining whether the material supplied conforms to all the requirements set forth in the specification.

The logical procedure then falls into two steps:

The first step is an analysis of the function to be performed by the material or equipment, and a study of what is necessary or available for the intended purpose. This is primarily a technical study, but the purchasing agent can contribute much information, particularly on the latter point, from his data file on materials and his constant contact with markets, sales representatives, and the promotional literature of potential vendors. It is quite probable that several different types of material may be found available, and the first act of selection is to determine which *type* is most suitable. Then the particular *grade* within that type is determined, following the principles outlined earlier in this article.

This functional analysis may be simple or complicated, according to the type of material under consideration. Yet however simple or elementary it may seem, it should nevertheless be undertaken with care and thoroughness, for it becomes the basis of an important and somewhat permanent quality control governing the procurement program, and without it the resulting specification loses much of its force and value. Experience discloses that such analyses have frequently revealed shortcomings or functional misuse of materials prior to the time of the study. The consequent inefficiency and waste might readily have been perpetuated instead of corrected if specification writing were undertaken without this fundamental preliminary determination.

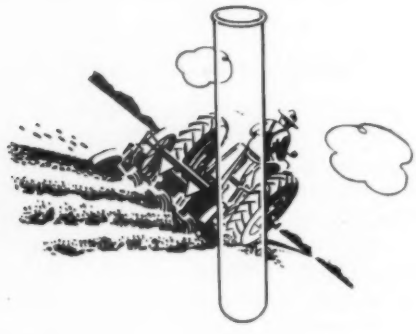
Stating the Quality Factors

The second step is to evolve a statement of requirements and quality factors, based upon the information derived from the functional analysis, in such a manner as to assure the procurement of the proper material. The purchasing agent has several responsibilities at this stage, in coordinating the special and precise requirements with the standards and practices of good commercial usage, so as to arrive at a practicable and economical result. For example, one of the purposes of having a specification, beyond defining the material, is to provide a basis of comparison on competitive bids. Yet many specifications are so closely written around a particular product that competition is effectively excluded. This of course should be avoided, by striking out the limiting requirements of this nature and sticking to generalizations that bring the specification within established commercial grades and standards so far as possible. If existing standard specifications are applicable, it is desirable to adopt these in preference to setting up new requirements, even at the expense of some slight compromise in design. In other words, while the definition must be very specific, it is not necessarily special or peculiar to the one buyer's requirement. The range of materials and products readily available on the market is wide enough to satisfy the majority of industrial needs.

Another thing to be avoided is unduly restrictive tolerances as to analysis or dimension. Precision is an element of quality which increases costs very rapidly, in the first cost of manufacture as well as in inspection

costs and the proportion of rejects. There are many applications in which the finest precision is worth all the extra cost involved, but there are many more instances in which it is not essential and merely represents an avoidable waste. This is another case in which adherence to commercial grades and tolerances is a decided advantage.

Other undesirable features in a specification are impractical requirements and those which cannot be tested for. As a general principle, any requirement which can not be measured or substantiated by test, so as to insure that the material delivered is in accordance with the terms of the order, has no proper place in a purchase specification. To round out the statement of quality, therefore, practical test procedures should be established for measuring either performance or composition, or both, and should be incorporated in the specification at this point. Standard methods of test are preferable, though in some cases special methods may have to be devised. It is important in any case, however, that the specified test methods be mutually acceptable to both the manufacturer and the user of the material or product, since they become the basis of aceptance or rejection of deliveries, and without a basic agreement on this point serious misunderstandings and controversies may ensue.



On some products of natural origin, exact adherence to the quality standards specified may not be practicable or possible. This does not destroy the value of the specification either as a purchasing instrument or as a means of quality control. The situation is commonly met by establishing a certain tolerance, with maximum and minimum limits, and sometimes correlating this with a sliding scale of price premiums or allowances in proportion to these variations. An example in point is in the purchase of coal, where, in addition to the type and source (mine or region) quality may be specified in terms of minimum heat value and maximum content of sulphur and ash. There are definite limitations to the amount of variation which can be allowed and still have a usable fuel, due to difficulties in firing, boiler efficiency, and extra handling costs. But within these limits the product value can be equitably adjusted to the satisfaction of both buyer and seller by means of a predetermined price premium for additional Btu's and predetermined allowances for deficiencies in this respect or for excessive sulphur and ash content.

The purchasing agent is also interested in a variety of other information details which directly concern the manner of procurement and delivery, such as inspection, sampling, packing, marking of shipments, etc., all of which are logically included in an ordering description.

It should also be noted that while the specification itself is a very precise document, strictly to be observed in all of its details, the specification policy should be flexible enough to provide for review and revision as circumstances may dictate, so as to avoid "freezing" quality standards and barring the way to progress or adjustment.

Typical Specification Form

The actual drafting of the specification should follow a definite pattern or form of presentation throughout each organization. This has a dual advantage: for the specification writer or committee it furnishes a guide as to the details that should be included, preventing oversights; and for the users of the specification it eliminates confusion and facilities reference by having a particular place or section in which to look for certain types of information

In general outline, the various specification forms are naturally quite similar, and good working models may be found by studying any established series such as the U. S. Government Federal Specifications, Army-Navy Specifications, or those of the various technical societies already mentioned. For purposes of illustration, however, a single form will be analyzed in some detail. The form chosen is a somewhat simplified modification of the Federal Specification which has been satisfactorily used in a number of industrial concerns.

Heading. The heading of the specification contains the company name (an important identification since such specifications are often furnished to suppliers to keep on file for reference) and a descriptive title designating the material covered, briefly and in the layman's language. There is, further, a designation of the particular specification by serial number, symbol, or code number which is part of a systematic specification index and at the same time a positive reference to the particular document. The specification is dated, and clearly indicated as either an original or revised specification. If a revision, the date of approval and effective date are also shown, in order to avoid any possible confusion due to the unintentional use of a specification which has been rendered obsolete through revision. In referring to the specification, it is the usual practice to cite title, code number, and date, so as to make a very positive identification.

Nine Standard Sections

The body of the specification contains nine sections, each identified by a letter of the alphabet and covering particular phases of the requirement. If there are no entries to be made in any one or more of these sections, the sections are nevertheless retained with the notation that the section is blank in that particular insance.

Section A covers references to applicable standard specifications, methods of test, etc., which are thus incorporated into the specification without the necessity of copying the actual text. If it is deemed desirable, either for the master copy or for copies furnished to suppliers, printed copies of these standard specifications may be attached for reference.

Section B sets forth the various types, grades, classes, sizes, etc., of material covered by the specification.

Section C describes fully and clearly the use for which the material or equipment covered by the specification is intended.

Section D states what kind of materials and workmanship shall enter into the product specified.

INSPECTION REPORT

Material .....

Purchase Order No. .....

Received .....

.....

This material has been inspected and found satisfactory.

Date..... .....
Signature

If material is not satisfactory, give detailed report on the reverse side of this sheet.

This report must be delivered to Purchasing Department within 48 hours of receipt of materials.

Typical form of inspection report made to the Purchasing Department

Section E contains all general requirements, i.e., all those requirements that are common to all of the types, grades, classes, etc., of the material covered.

Section F covers detail requirements peculiar to each type, grade, class, etc., included under the specification.

Section G states where inspection will be made, and gives any other information pertinent to the inspection and test procedure applying to the particular case.

Section H includes information on package types and sizes, labeling data, marking of shipments, and related subjects.

Section I is that portion of the specification set aside for any notes such as, for example, instructions to requisitioning officers, statements as to the submission of samples with bids, where additional copies of the specification can be obtained, and other information of like nature.

The above outline is typical in the comprehensive and orderly coverage of the various details necessary to be included in a complete working specification. It can be further broken down, or altered to meet the particular needs of a company and its purchasing department, and the type of materials or product specified, but once the form has been decided upon and proved in use, it should be followed consistently. Wherever necessary, such additional information as blueprints, installation data, and the like, should be attached to and made a part of the specification.

Controlling Quality

In using such a specification as the instrument of procurement and quality control, it is necessary to start back at the point where the requisition is written. In addition to the original or master copy, working copies are furnished to all those responsible for requisitioning the material, and care should be taken to see that these men are fully acquainted with what items are covered by company specification, what the specifications contain, and how they are to be used. In this connection, an index to all specifications in force, by title and by reference number, is exceedingly useful. Where the number of specifications is relatively small, and the system well established, familiarity is quickly acquired along with usage, but in companies where a large number of specifications are currently in force, and where reference to some of them is infrequent, the index greatly facilitates their use. It is also important that in the case of a revision, the new specifications be promptly issued and all outstanding copies of those which are superseded should be recalled. The specification record should therefore include a list showing the distribution of all copies.

The principal purpose of having the specification in the hands of requisitioning officials is to avoid calls for non-standard items. The reference in this case will usually go no farther than checking to see what is standard and prescribed for a given purpose, and to identify the need by title or specification number. It is the responsibility of the purchasing department to check requisitions against applicable specifications to see that standards are observed and special requirements held to a minimum. It is not only the prerogative but the duty of the purchasing agent to buy strictly according to the specification once it has been approved, which may mean arbitrarily changing the requisition. But as in all cases involving inter-departmental relations of this sort, the process of education is preferable, over a period of time, tends to eliminate any difficulties which may at first obtain.

Specifications as Working Tools

As a working tool, the specification may be used in a number of ways. In calling for bids on a particular order, copies of the complete specification may be included with the invitation to bid, assuring a comparable basis on which quotations may be evaluated. In the interests of progress, availability, and the potentialities of greater economy, convenience, or improvement of product through the use of some alternative material, many companies include on their inquiries the statement that they are receptive to such alternative suggestions, but in such cases it is essential that the quotation shall clearly state what it is proposed to furnish, and wherein it differs from that specified. On repetitive items—and this is where specifications are of greatest value—it is frequently a simpler and more satisfactory method to have copies of the specification on file with probable suppliers, so that the matter can be covered by a simple reference to the specification number in the inquiry or purchase order. It is essential in such cases that the file be kept up to date as outlined above, to avoid misunderstandings and working to obsolete standards. The whole situation is greatly simplified, of course, when recognized industry or technical standards can be used instead of special company specifications.

Buying to specification does not necessarily involve the whole of this procedure. A purchase may concern one of the component parts of a product described in the standard. In such cases the specification is used as a guide in the purchasing department, to the end that the ordering description may conform to the requirements as set forth, and only those sections which are directly pertinent to the matter in hand are used, generally being included in the purchase order without reference to the complete specification by the vendor.

As the final step, copies of the specification are furnished to those responsible for inspection and test of deliveries, whose procedure and decisions must be

governed by the terms of the specification in determining whether the goods are in accordance with the requirement and the order.

Responsibility for Inspection

Whether goods are ordered by formal specification or by any of the other means of description previously outlined, the inspection of deliveries is essential to insure that the quality is as represented. The most accurate and painstaking attention to quality factors in ordering are wasted without a positive check on the quality which is actually received.

Practice varies in respect to the responsibility for this quality inspection. The only safe generalization is that it is considered a separate responsibility from the inspection for quantity delivered, which naturally rests with the receiving department. In the majority of cases, quality inspection is a function of the using or engineering departments, with a tendency in larger organizations (where the volume of such work is greater and where a higher degree of functional organization obtains) to set up a special inspection department for this purpose. A recent survey indicates that the purchasing department shares this responsibility in something less than 20% of industrial establishments and has the sole responsibility in less than 7%. In the larger organizations, the proportion is even less. In companies which regularly maintain laboratories in connection with their type of business, inspection is sometimes delegated to the laboratory; the percentages are closely parallel to purchasing responsibility in this respect, with the same indication that in the larger organizations the tendency is to regard inspection as a wholly separate function, regardless of the laboratory facilities which may be available.

Inspection and Acceptance

This situation reflects both the basic responsibility of production and engineering departments for setting quality standards, and the management principle of setting up checks and balances between the various departments. An extension of this policy of independent responsibility, as well as the opportunity to have capable inspection service available to those companies not having their own technical facilities, is seen in the growing use of commercial testing laboratory organizations to conduct acceptance tests.

Inspecton is measurement, and does not necessarily include the decision as to acceptance or rejection of deliveries. Materials may be usable even if there is some deviation from specified quality. Especially under wartime conditions when some materials are exceedingly hard to get, and serious delays may be involved, it may be the part of wisdom to look to some form of adjustment or correction other than arbitrary rejection. There will obviously be some cases, on which allowable talerances have been carefully calculated beforehand, where such a policy is not practicable, and it can not be doubted that insistence on the strict observance of requirements, with summary rejection in the event of a failure to do so, is the most effective way of educating suppliers to recognize the importance of the quality factor. It must also be taken into consideration that the whole process of inspection and test, rehandling, and transportation charges, represents an element of cost which must be reflected somewhere in the overall picture.

It is significant that the responsibility for acceptance, as distinct from the inspection itself, is predominantly regarded as a purchasng department matter, with production and inspection departments rather well down the line, and other factors negligible. Acceptance is considered as a commercial rather than a physical consideration. And the reports are almost unanimous that contacts with the vendor in arranging for the return of merchandise or for any adjustments which may become necessary.

Inspection Policies

The character of the inspection, as well as the method, depends largely on the type of goods involved. Some will require a complete and detailed examination and test of every unit, whereas others may be adequately handled by visual inspection, spot sampling, or some reasonably representative selective system. On heavy or bulky products, or those purchased in large quantity, or with extreme precision requirements, it may be practicable to have the inspection made at the supplier's plant and avoid the delay and expense of handling and reshipment in case of error. The Army and Navy use this method with all important suppliers, and it is particularly important when these products are shipped directly to the points of use instead of being routed through intermediate receiving points or depots.

The reliability of the supplier, as evidenced by past experience, is an important factor in determining the extent to which inspection is necessary—another indication of the very great importance of mutual confidence and satisfactory relations between buyer and seller. Manufacturers have made great strides in recent years toward easing the inspection burden. One example is the practice of furnishing certified analyses of alloy steels with the shipment, based on actual tests of every production lot. Another is the labelling plan developed by the National Bureau of Standards in connection with Federal specifications, whereby manufacturers are listed as "willing to certify" that their product meets all specified requirements and then label their material or merchandise accordingly.

Four Points to Remember

In setting up a policy and procedure for the inspection of deliveries, four points are essential:

1. Tests must be mutually satisfactory to both buyer and seller, and the seller must understand clearly what the requirements are and how they are to be measured.
2. The nature and extent of inspection should be appropriate to the importance of the material—neither too slight nor too detailed and expensive.
3. Inspection should be made promptly, so as to avoid having materials go into production without adequate inspection, or cluttering up storage space and delaying inventory entries by having large quantities of material awaiting inspection, or forfeiting the privileges of rejection or adjustment because of overlong delay .
4. The result of the inspection should be made a matter of record, properly certified by the signature of the authorized inspection officer, and incorporated in the file pertaining to the purchase.

Next Month: Quality Factors in Purchasing

The CIVILIAN ECONOMY is GETTING SHABBY

Having a quota is not the same as getting the goods; WPB must act quickly to insure greater production of civilian requirements.

By A. N. WECKSLER

CURTAILMENT of the civilian economy has reached a stage where it has become necessary to assure that certain minimum standards be maintained.

There is still some "fat" that can be squeezed out, though supplies now available in many cases represent not current production but stocks still remaining in the distributive system. The dearth of goods is spotty. In some cases and in some areas, supplies are still available. However, the consumer now is beginning to feel the impact of War Production Board orders phohibiting production.

Where supplies on the market are dependent upon new production, shortages are general. In addition to the formal OPA rationing programs for fuel and food, industries have themselves adopted voluntary rationing programs under which manufacturers ration their distributors, and the distributors ration their outlets. These rationing devices are justified by the marked scarcity of goods.

To meet the essential needs, however, WPB, through the Office of Civilian Supply, has established certain quotas which industries are permitted to produce. These quotas, in many instances, are not being met.

A glaring example which highlights this condition is the production of baby carriages. The Office of Civilian Supply had determined that it would be necessary to produce 850,000 such carriages. Reports from the market revealed that the goods available on the market were not sufficient to meet the demand. Investigation showed that production was at the rate of 250,000 carriages a year.

The War Production Board had approved the higher rate of production, but had taken no steps to insure output.

When this example was projected into the conditions that apply to the output of repair parts for existing equipment in the civilian economy, the gravity of the situation becomes apparent. The problem cannot be overstated.

Food Production Is Threatened

Shortage of agricultural machinery and spare parts, which recently became a major issue, was in great part traceable to this factor. The WPB Office of Civilian Supply made a determination of needs for new agricultural machinery and repair parts. The WPB Requirements Committee approved allocation of materials to meet this determination. Bureaucratic procedure on the part of Government departments led to a delay in production of the required equipment, but the fact that

Joseph L. Weiner, Director of the WPB Office of Civilian Supply—the civilian economy is his responsibility.

Baby carriages are essential, but less than one-third of the quota is being reduced.

Transportation service is one of the civilian needs that must be maintained.

steps were not taken to insure the approved rate of production also contributed.

This situation was finally recognized with the transfer of the entire control program to the Department of Agriculture, where a program was established to force production to the limits required. One phase of the new control provides that producers who are not able to manufacture their entire quotas, must notify WPB. That part of the quota which a particular producer cannot fill will be placed with another producer.

Production for war has changed conditions in industry. There is no longer the pressure within plants to produce civilian goods. This is especially true when only a small portion of the output of a plant can be devoted to production of civilian goods. In many cases, it becomes uneconomical to work on civilian goods or on repair parts.

WPB officials in the Office of Civilian Supply indicate that unless concrete steps are taken to guarantee the minimum output of repair parts for civilian industry and of civilian goods, the nation's economy may be scaled down to a level below that which is considered desirable or "safe".

Concentration Hasn't Worked

This danger was recognized during the middle of 1942, and at the time two remedies were under consideration and were adopted as policy by WPB. One approach was "concentration of production", and Chairman Nelson issued a statement approving concentration in principle. The second approach was for an active and widespread policy of simplification.

A meager attempt at "concentration" was made in the case of production of stoves. Under Order L-23-c, production of domestic cooking appliances and stoves was restricted to a group of small manufacturers established arbitrarily on the basis of their previous dollar volume of output. Result was that the number of cooking appliances and stoves did not meet the essential demands, and Order L-23-d was issued reversing the earlier order.

No studied attempt was made to concentrate production in a group of producers who were capable of meeting the requirements, and further, no steps were taken to check on whether the authorized quotas of production were being filled.

Several other ill-fated approaches toward concentration were made, and when they failed to produce the desired results, no further active steps were taken.

Simplification has been a controversial issue for some time. Bernard M. Baruch, chairman of the War Industries Board of World War I, maintains that the solution of civilian supply during war time is adoption of rigid utlity standards for goods. This extreme approach toward simplification has the dual advantage of conserving material and manpower.

The Manpower Bottleneck

WPB Chairman Nelson has endorsed further simplification of product, but takes a more cautious attitude than that expressed by Baruch. His attitude may reflect the supply of materials, without a realistic evaluation of the manpower shortage.

Basically, manpower will be the limiting factor on civilian goods output. Labor supply of "non-essential" industry will be the hunting ground for both essential industry and Selective Service. Under these conditions, cost of production of civilian goods, due to labor turnover and inability to maintain an efficient labor force, will increase to a point where output is no longer possible within the price ceilings of the Office of Price Administration.

Unless some measure of protection is afforded civilian industry from war industry hirings, further shutdowns are inevitable. It is the purpose of the Government to divert labor from non-essential occupations to war industry. On the other hand, an indiscrim-

inate policy would raid civilian industry without assuring the continuance of business and services contributing to the health and safety of a community.

A feature of the "concentration of production" plan as adopted in Britain is the protection of the labor force of plants into which essential civilian output has been concentrated.

What Is Bedrock?

Lack of a clearly defined program for civilian production was responsible for the recent "bedrock" economy report prepared by the WPB Office of Civilian Supply. This report was aimed at establishing a level for the civilian economy below which health and morale of the nation would be endangered.

The report was widely misunderstood, especially as one feature of the report received most widespread publicity. The report indicates that "bedrock" requirements for alcoholic beverages is one percent of 1940 consumption. In view of the fact that current stocks of alcoholic beverages approximate a three-and-a-half-year stockpile, the "bedrock" report appeared incongruous. However, intention was to establish a rate of minimum production in the event that no stocks were on hand or available.

The "bedrock" report served only to arouse speculation as to how greatly the economy will be squeezed, and also resentment developed due to the severity of conditions which the report envisions.

In evaluating the report, it is necessary to take into account the fact that to date the War Production Board has taken positive steps toward aiding war industry, but has taken a negative approach toward civilian industry. There have been numerous prohibitions and limitations, and few measures which have served actively to aid civilian industry.

No Adequate Organization

This attitude has been largely conditioned by the experience early in the war effort, when segments of industry were reluctant to engage in war production. At that time, it was necessary actively to discourage output of civilian goods. Office of Civilian Supply officials maintain that the reverse is true at this time.

An active program to insure output of such civilian goods as are considered necessary to meet minimum requirements may require some major shifts in governmental organization.

The needs of civilian supply cut across the Department of Agriculture, the Office of the Rubber Director, the Petroleum Administrator for War, Office of Defense Transportation, Office of Price Administration, Office for War Utilities, and the War Manpower Commission. The difficulties arise out of the wide dispersion of emergency war powers among a number of Government agencies, each operating under specific delegations of authority.

Result is that the Office of Civilian Supply does not have a direct contact with agencies which nevertheless control program of immediate importance to the entire question of civilian supply.

To further complicate the problem, the Office of Civilian Supply is restricted to the function of suggesting policy, and has no operating function even within the War Production Board.

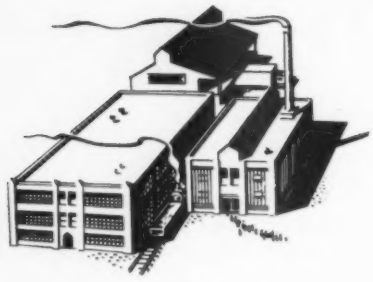
The operating agencies of the Office of Civilian Supply are the WPB Industry Divisions (The Department of Agriculture in the case of food, and the Petroleum Administration for War in the case of fuel). The major function of the WPB Divisions is the guidance and control of the war phases of industry. The repair parts problem in most cases is considered of secondary importance, and the approach of the divisions to a purely civilian industry is negative.

Some glaring deficiency in supply—such as occurred in the case of agricultural equipment—may serve to highlight the problem, and to force remedial measures.

Canned foods are both a civilian and military staple, and must be shared between both programs.

The farmer needs equipment to meet the wartime food goals.

THE PURCHASING DEPARTMENT



. . . Wartime Key to Production Control

The new science of "procurement forecasting" is a vital factor in planning industrial production under the conditions imposed by a war economy

By FREDERICK W. KIMBALL

AMERICAN industry is at war! A war which is resolving itself into a Battle of Production, with the eventual victor to be the side that can produce the most planes, tanks, guns and ships. It is a war which demands the mobilization of our utmost productive effort through the conversion and expansion of the gigantic industrial capacity of the nation.

This conversion of industry for the all-out war effort is a process demanding changes in every phase of operations. Obvious to management are the changes in methods, tools, machines layout and material requirements affecting the operating departments, which are necessary to produce an airplane instead of an automobile, or a bomb fuse instead of a padlock. "Tooling up" has become a familiar paraphrase for the feverish activity of industry along these lines. Less obvious, and all too frequently overlooked, are the changes that must be made in the co-ordinative techniques of management, particularly with respect to the procedures and functions performed by essential service departments, such as purchasing.

It is the purpose of this paper to outline the procedures and functions which must be incorporated in a plan for "tooling up" the purchasing departments of industry for the performance of its most important wartime responsibility—facilitating production planning.

Peacetime Concept of Budgeting and Production Planning

A glance backward to pre-war business is essential for grasping the new concept of the role which purchasing department must play today. During the days of the thirties, the more progressive managements developed sales organizations with the facilities for making sales forecasts as a basis for production planning, scheduling, and preparing periodic budgets. Sales were the traditional basis for all such technique of control. For instance, the Paraffine Companies Inc., of San Francisco, by developing a technique of sales forecasting for its products which it claims is usually within 1%-2%, was able to plan the production schedule and prepare master and departmental budgets which resulted in the most efficient use of plant at any level of operations.

This paper received a $100 award from the Boffey Memorial Fund in the 1942 Students' Educational Contest sponsored by the National Association of Purchasing Agents. Mr. Kimball is a student at the Graduate School of Business, Stanford University, Palo Alto, California.

However, those were the days when finished goods when begging in a "buyer's market" and the mere signing of a requisition brought a proffered flood of materials and supplies through the door of the purchasing agent's office. Those were the days when the profitable movement of finished product by sales was the "bottleneck" to increased production. Hence, production planning and scheduling and budgeting from the traditional sales forecast were in harmony with the all-important concept offered here, of utilizing whatever factor is the limiting factor, or "bottleneck" to increased production as the basis for budgeting, and for planning and scheduling production.

The Wartime Situation

The year 1942 brought us to a point in the transition of the United States from a peacetime to a wartime economy, for which the traditional sales forecast as a basis for production planning and budgeting is as obsolete as the Maginot Line. With national income in excess of 117 billion dollars, and with only 65 billion dollars' worth of goods to be available for consumers, plus an insatiable international demand for armaments, sales have ceased to be a "bottleneck" to the vast majority of industries today. At the same time, the supply of raw materials and supplies for meeting these demands is becoming progressively scarcer.

It is under these wartime conditions that the concept of planning production from the "bottleneck" is useful to management in co-ordinating the procedures and function of departments complementary to actual operations. Where the "bottleneck" lies for an individual company depends upon the nature of its output and its relative importance to the war effort.

Companies whose output epitomizes the "first things first" policy of the government towards priorities and allocations, find their "bottleneck," or limiting factor, chiefly in the limits of plant capacity or in the supply of skilled labor for multi-shift operation. Aircraft and the shipbuilding industries are examples. Where this situation exists, it is the vital job of the purchasing department to ensure that producton planning may be successfully related to plant capacity by accepting the responsibility for seeing that unexpected "bottlenecks" do not develop among any of the many materials, parts, and supplies that must flow into production. As will be expanded later, this responsibility necessitates a close integration of inventory control with conditions in the supply markets.

For companies producing goods of a semi-essential nature, such as agricultural machinery, milk separators, or other food-processing equipment, allocations by the government enable them to procure only a portion of the materials and supplies required for filling orders. Here the "bottleneck" to increased production lies in materials and the problems connected with their procurement. Here it should become the duty of the purchasing department to furnish basic information for production planning by the performance of a function we may term "procurement forecasting."

Three Types of Problems

Yet another group of companies may find themselves almost out of business because their nonessential output has used critical materials no longer available to them. Aluminum pots and pans may be taken as an example. While production, if any, must be planned with this "bottleneck" as a prime consideration, the task confronting the purchasing department is to work out satisfactory substitutes of nonessential materials.

Realistically, industry and its wartime procurement problems do not fall into any such precise grouping, and the classification is valuable only in outlining the three principal wartime problems relating to production planning and procurement. The average company, producing various lines of goods with different priorities, and almost continually faced with the necessity of substitution, must be prepared to cope with all three problems. Therefore, the integration of inventory control with conditions in the supply markets, the development of "procurement forecasting" techniques, and the development of routine procedures to aid in the substitution of materials, are essential to the "tooling up" of the purchasing department for wartime service to its company.

The Integration of Inventory Control with Supply Conditions

The necessity for a closer integration of inventory control with supply conditions is particularly important in these days when an article which the purchasing agent might normally expect to obtain in a week or two, now takes several months before delivery can be made. Companies having high priority ratings for the article are no exception. Unless such delays have been anticipated and provided for by the stores department, curtailment of some phase of operations results, and the production schedule must be rearranged downward. Or, to look at it from our concept, the unanticipated delay in delivery has resulted in the creation of an unnecessary scarce factor, or "bottleneck" to production, which must now serve as the basis for the re-planning of production. When one considers the vast quantity of material and supply items that must be carried in inventory by the average manufacturing concern, it becomes obvious that control over "when to order" as affected by constantly changing delivery schedules, must be made routine, and not left to informal contact between purchasing and stores.

This new control must extend into the heart of the stores-control system. Without going too deeply into the techniques of this inventory control, it may be assumed that the orthodox methods are used universally. That is, that maximum, minimum, and order points have been set up for each item, or group of items, and that requisitions for requirements are sent by the storeskeeper to purchasing when the available stock on hand has reached the limit set by the order point. This ordering point, as well as the minimum, which is dependent upon the same variables, is entirely dependent upon: (1) the time required to fill an order, and (2) probable variations in the rate of consumption within the plant.*

For the plant that is producing a highly essential war item and can schedule its operations from the relatively fixed limits of plant capacity, the second determinative variable will remain a similarly fixed quantity. In other words, the ability to plan production from the basis of plant capacity leaves only the time required to fill an order as the variable by which the order point must be adjusted.

The adjustment of order points to take care of undependable delivery schedules during the present war may be accomplished in two ways. The first method is to arbitrarily raise the order points and minimums by a certain percentage in order to provide a larger margin of safety, or "cushion" against "unforeseen" delays in delivery. Or the storekeeper might take the inventory ceiling off any items for which he suspects a shortage will develop. Such a method, however, is expensive. Inventory carrying costs, such as insurance, taxes, depreciation, rent, and manual and clerical handling expense, are inflated. Dangers of obsolescene and spoilage are increased. Moreover, the method does not cure the danger of being caught short, since the multi-fold increases in delivery times for certain items are much larger than it would be feasible to try to prevent by an overall increase in inventory. Thus, "bottlenecks" for materials affected by "unusual circumstances" would still develop. Again, such a method is unpatriotic. With inventories per unit of output at an all-time high in industry, the war effort cannot afford to have companies accumulate materials and supplies which will be held out of production for some time in order to "play safe." Thus the method would aid in creating the shortages it is designed to prevent.

The second, and recommended, method utilizes the fact that the purchasing department, of all departments in the average company, is in the key position to collect information concerning the changing situation in the supply markets and the time it takes an order to be filled, and to transmit this information to the stores department. More specifically, a routine method of piping to the storeskeeper the information gathered by the Purchasing Agent regarding the time required to fill orders for certain items must be established. Then the former will be in a position to make intelligently the necessary adjustments to order points and minimums in controlling inventory. Then, too, the storeskeeper will be in a position to know when to requisition new materials and supplies, other than by reliance upon a "system" whose automaticity serves to create a false sense of security.

The Purchasing Agent's Sources of Information

The information collected by the Purchasing Agent should anticipate changes in the time required to fill an order and should not come as the result of sad experience with current orders. Sources from which this information should be forthcoming may be listed as:

1. Inquiries to suppliers based upon changes in the priority and allocations situation, as should be followed by every purchasing department.
2. Communications initiated by suppliers with whom close trade connections have been established through a history of routine, periodic orders.
3. Communications from other suppliers wishing to

*Alford, L. P., "Cost and Production Handbook," Section 9, pp. 453-455.

move available stocks to buyers with the requisite priority rating.

4. Information and "tips" received from visiting salesmen.
5. Other informal sources, including the salesmen of one's own company.

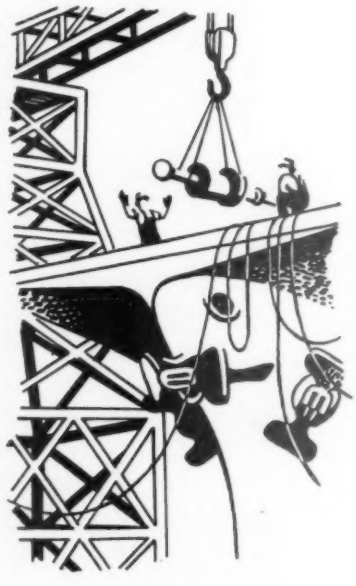
Classifying the Inventory

Although the exact procedures for transmitting this information from purchasing to stores must be "tailor-made" to fit in with the peculiarities of an organization and procedures existing within each company, the procedure to be outlined suggests the general principles which must be considered. This suggested procedure may be outlined as follows:

1. The storeskeeper and the Purchasing Agent should co-operate in classifying the many items carried in inventory into groups for which the conditions affecting the time required to fill an order and receive delivery are closely similar, and for which future changes will most likely be uniform.
2. The items, thus classified, should be listed vertically to form the first column of a table. In the second column is listed the approximate time required for getting delivery for each group of items, as is currently used as the basis for the established order point in use by stores. Subsequent columns are provided for recording changes in column two as information is received by the purchasing agent.
3. When a change needs to be made, the Purchasing Agent, or clerk to whom the job has been delegated, enters the new time required for delivery in the next vacant column. He also records the change on a form which contains the name or symbol of the item, the previous, and the new time required for delivery, and sends it to the storeskeeper.
4. Upon receipt of the information from purchasing, the storeskeeper will change the order point in the inventory control system, and may possibly want to enter the change on a chart identical to that used by the Purchasing Agent.

The system of classification is essential in order to keep the list of items from being unwieldy, and to reduce clerical expense connected with the plan. The intra-company telephone may be used to transmit the information from purchasing to stores if the Purchasing Agent expresses opposition to filling out the simple form. However, because of the advantage of having written proof of the information being sent, as well as allowing the storeskeeper to dispose of the change at his convenience, the suggested form is recommended. It would also be well to set up a minimum requirement of the difference in delivery times that shall be recorded, since the minimum set in the control of inventory in stores will safeguard against small changes in this respect which the purchasing agent need not be bothered about.

As epitomized by the second group of companies, described as producing semi-essential goods, the problem confronting nearly all companies today is the uncertainty as to the amount of materials which they will be able to procure and the time of delivery.



Even such essential industries as aircraft and shipbuilding have experienced periods during 1941 when production was running at less than capacity because of shortages in available supplies of aluminum and steel plate. With blanket priorities for an entire industry becoming scarcer, and a resulting rise in blanket priorities for individual projects, it is likely that nearly every company will have some phase of its operations curtailed by a material "bottleneck".

Under this situation, production planning must tie to whatever material and supplies are available so that as little waste of plant, labor, and supervision as possible results. To put it another way, production planning must schedule operations from the "bottleneck" of materials, in order to co-ordinate these other elements of production with the supply of materials in the most efficient and economical manner, thus reducing idle labor and overhead costs to a minimum.

With this basis for planning production, it is obvious that again the purchasing department is in a key position. Not only must the department for planning production have knowledge of what materials are available in inventory, but, if long-range planning is to be efficiently accomplished, it must know what materials are coming in on current orders, and, more important, what materials will be available for future periods under government allocation and priority plans.

A few months ago, to assign the purchasing department of any company this task of prophesying what government priorities were going to do with the supply of materials necessary for the production of the company would have been fantastic. Only recently has sufficient progress been made by government action along these lines so that it is safe to assert that "procurement forecasting," the prediction of what materials will be available for production in coming perods, will be an essential function of the purchasing department.

New Functions for Purchasing

On the other side of the picture is the job that must be performed by purchasing, standing, as it were, between the Division of Priorities, and production planning. This job consists, first of handling the many forms and regulations that must be disposed of in maneuvering the company into its proper berth in the allocations line-up. Secondly, provision must be made for transmitting the information to the planning department in the proper form.

Such a job is so specialized and sharply delineated from the company-vendor relationships taking up the bulk of the Purchasing Agent's time, that the creation of a priorities division within the purchasing department is the most expeditious method of handling the task for most medium-and large-sized companies. Indeed, the importance of this specialized job has already led a few companies to create such divisions within the purchasing department for handling earlier priority difficulties. Regardless of the form of organization installed, however, it is essential that the purchasing department recognize these functions and make provision for their performance in order that the department may fulfill its responsibilities as key aid to production planning.

The Substitution of Noncritical Materials

Another important wartime problem facing many firms today with "bottlenecks" in materials and supplies is that of finding satisfactory substitutes for materials that are no longer available for their less-essential production. This problem is primarily the job of the production engineering department. However, almost invariably the purchasing department is in a position to furnish directive informaton for this work. This information should be of the following nature:

1. The supply situation with regard to priorities, allocations, and possible future outlook as to shortages, for each alternative material proposed by the production engineering department.
2. Suggestion of any additional materials that could possibly be used and that are on the market and available to the company.
3. Supplementary information concerning what competitors and related industries are doing.
4. Periodic report concerning the supply situation for the materials used and suggestions for new improvements on the market.
5. When new material has been adopted and proved successful, the Purchasing Agent should furnish information to the production engineering department concerning: (1) the standard sizes available in the trade for the new materials that are closest to the sizes desired for use in the product, (2) the price and availability of any necessary "special" sizes desired for the product.

Supplying information concerning what competitors are doing to solve the problem is normally the responsibility of the sales department. However, the average purchasing agent, through his local association, has nearly an equally abundant fund of information which should be utilized. The requirements for the rest of the information are self-explanatory.

Under these circumstances, as with "procurement forecasting", it is essential that purchasing make adequate provision to keep abreast of developments with regard to priorities and allocations. Therefore, the same specialization of this function by the creation of a priorities division within the department, is recommended as before. However, the information also includes that accruing from the vendor-company activities carried on by the purchasing agent. Since no executive action is involved, the transmital of this information from purchasing to the production engineering department is best accomplished by the Purchasing Agent, a representative from priorities division, and the production engineers meeting in conference for the exchange of ideas and information.

When this work has successfully been accomplished for any material, the duties of the purchasing department should continue on the basis described in the preceding sections of this paper in order to facilitate production planning.

Thus we see that the war effort has placed the purchasing departments of industry on the firing line of productive activity. The concept that the purchasing department is created for handling merely vendor-company relationships is inadequate for the task that must be performed by this department in wartime. It has been the purpose of this paper to outline the principal new elements of this task. All are derived from the fundamental concept that production planning must begin from the "bottleneck" to increased output. As shown, this almost invariably focuses attention upon the purchasing department, for which an understanding of its wartime task of furnishing the key to production planning and scheduling is essential.

WPB REGIONAL OFFICES AND THEIR FUNCTIONS

Since a War Production Board policy of decentralization was announced ten months ago, the field offices have been assuming an increasing number of activities hitherto centered in Washington. Functions of these offices have ranged from keeping housewives informed on the importance of conserving droplets of fats to helping businessmen obtain contracts. Day-to-day operations are conducted through the field offices, and various problems of war production are met at the source.

Decentralization of War Production Board activities is constantly going on, the most recent order directing that applications for priority assistance on Form PD-1A be filed with the nearest of the 131 WPB district offices and authorizing the 12 regional offices, beginning March 15, to assign preference ratings on PD-1A certificates to deliveries of materials valued at $100 or less. This preliminary value limitation will be progressively stepped up, and it is expected that more than 80 per cent of all PD-1A applications will be handled by the regional offices.

Twelve Regional Offices

There are 12 regional offices, each located in a key city: Boston, New York, Philadelphia, Atlanta, Cleveland, Detroit, Chicago, Minneapolis, Kansas City, Dallas, Denver, and San Francisco. These are supervisory, parent offices whose main job is to administer 131 district offices and to coordinate the service provided to the public through these district offices. In some cases, the field office is a district and regional office combined.

The field offices employ some 6,500 people selected chiefly on the basis of their understanding of local problems. These people handle more than a million contacts a week.

A field office is a two-way street—on the one hand, it takes from Washington the policies and programs to be translated into action and, on the other, it reflects local opinion to Washington.

If a small-businessman, having converted his factory to war work, needs help in obtaining a contract, he can take his problem to his nearest War Production Board office. If a defense housing project in a boom-town is proposed, the application to get it started is processed by the branch office.

If labor relations at a war plant are bad and there are some grievances, the branch office helps arrange a meeting with the union, company, and government representatives.

In countless ways, the field offices have handled problems at the source and by so doing, have obviated the necessity of visits to Washington involving time, energy, and expense.

A typical regional office has 13 departments, each

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PURCHASING MEN COME TO CLASS

The practical experiences of actual purchasing work must always provide the best text for studying the subject

By ALFRED BORNEMANN

SOME of the advantages of conducting a class composed of practical men, most of them actively engaged in the subject of the course, were revealed by the writer's experience with a group of individuals interested in purchasing. More than half of the group were employed in purchasing, as purchasing agent, buyer, statistician, or priorities information clerk. It was therefore soon possible to conduct classes somewhat like a graduate seminar, with discussions centering around practical problems illustrating the particular methods and problems of the different industries represented. These included public utilities, chemicals, printing and publishing, and motor trucks.

Detailed study of conventional texts was, for most of the groups, not altogether appropriate. Much more pertinent were reading and reporting on the *Handbooks* and the *Bulletin* of the N. A. P. A., the magazine PURCHASING, priority releases of the W. P. B., house organs, and trade journals. This procedure had the added advantage of providing a basis for keeping up with the literature in the future, as well as perhaps disseminating the idea of doing so among business associates. Moreover, at least one new member of the Association was gained when the advantages of the literature and information available through it became apparent.

The average text in any field of management must generally oversimplify matters for students and other readers whose education does not include direct contact with the subject under discussion. This becomes extremely evident in the field of purchasing. Thus, to take a simple illustration involving matters of procedural detail, it is customary to emphasize the importance of requiring those originating and submitting purchasing requisitions to fill them out accurately and with detailed correctness. To imply that this procedure must be and is in practice always demanded, even if it means returning the requisition, is of course to minimize the practcal possibilites of carrying on business. Students with experience immediately perceive that to expect perfection in such matters is to expect the impossible.

They easily realize that within an organization a constant internal process of education is going on, with the purchasing department, like the accounting and personnel departments, for example, attempting to get the others to carry out routine requirements according to the needs of those making the rules. In part the process may be thought of as a universal attempt at educating everyone else, which means of course that those doing the educating are at the same time being educated themselves. This brings to mind the occasion when a company official addressing the group on priorities pointed out with some satisfaction that Washington officials were very cooperative in learning the problems faced by business in connection with the priorities system. Is this not similar to what has been said of business men by many in Washington?

Other examples of the reaction of practical men to conventional text book material are illustrated by the type of discussion engendered by an examination of policies with respect to such matters as employes purchasing. It is all very well for responsible officials to determine that the company will no longer permit employee purchasing, contributes an alert junior, but although the policy was announced in September one of the officials now wants to buy a floor lamp to be given as a Christmas gift. This will mean further special exceptions down the line, and of course there are those in the purchasing department who will also hope to share in the exceptions.

The problem of internal cooperation is illustrated on a larger scale when organizational problems are under consideration. An experienced and mature group is well aware that the managerial charts of organization are largely theoretical guides and do not imply the mechanical smoothness which others might assume. Such diagrams are incapable of indicating the internal relationships, often personal, which grow up within an organization and which lead to tradition involving greater influence on the part of one or another department from organization to organization. Similarly, no diagram is usually adequate to define the scope of various functions and to illustrate developments in which individuals may report directly on certain fairly well-defined matters to executives other than their immediate superiors, and perhaps even to top officials—all of which may be expected to develop within any organization contrary to printed rules.

One of the interesting features of corporate activity which always comes to light in practical discussions of management is the rather obvious disparity between the facts of the situation and some theoretical discourses. Thus, in a recent supposedly realistic economics text book, we find the following gem: ". . . the president of

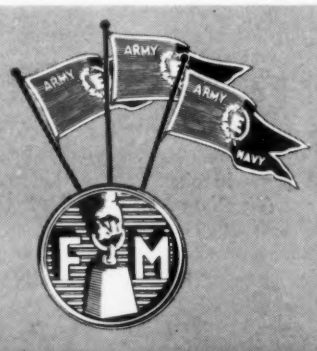
Continued on page 251

-you wouldn't accept a 10% increase in power cost without a protest

FAIRBANKS-MORSE TURBINE PUMPS
The F-M line offers complete range of capacities from 35 g.p.m. to 4000 g.p.m., for electric motor, Diesel or gasoline engine, or steam turbine drive. Open or closed impellers. Oil or water lubrication.

A SUDDEN boost of 10 per cent in power rates? You'd call it ridiculous—but many ten-year-old pumps of certain types, *even if as good as new,* take 10 per cent greater toll at the meter than today's Fairbanks-Morse models! And a 10 per cent reduction in power consumption is anything but ridiculous—especially now.

Before you arrange for increased power to meet heavier production schedules, eliminate power waste. Your resident Fairbanks-Morse Engineer can tell you quickly—without cost or obligation—whether or not the pumps you have are the types that exact the penalty of obsolescence. You may discover, as others have, that new pumps would solve your power problem today—and your cost problem tomorrow. Use your priority to buy for today with an eye on tomorrow's cost sheets. Write Fairbanks, Morse & Co., 600 S. Michigan Avenue, Chicago, Illinois.



FAIRBANKS-MORSE

DIESEL ENGINES
PUMPS
MOTORS
GENERATORS
SCALES
WATER SYSTEMS
FARM EQUIPMENT
STOKERS
AIR CONDITIONERS
RAILROAD EQUIPMENT

F M

Pumps

New PRODUCTS · IDEAS

NEW FINISH FOR METAL

New and totally different coating for metal products is announced by Chicago Vitreous Enamel Products Co., Chicago. It is called Armor-Vit. It is said to have exceptional rust and corrosion resistance, high impact and abrasion resistance, high heat resistance (1200°) without coating failure, and to effectively withstand acids, and to be highly resistant to various other chemicals. Illustration shows exhaust pipe after five-months weather exposure—Armor-Vit unaffected.

HOT-COLD WET-DRY PAINT STICKS

Real solidified paint sticks, for marking on hot or cold, or wet or dry surfaces, are being marketed the Markal Company, 6 E. Lake St. Chicago. The sticks are available in six different colors. Temperature range for the hot metal markers is 180 deg. to 1800 deg. F. The sticks are said to give permanent legibility without smearing or running, and to be absolutely weatherproof. Will not rub off, nor peel, crack or discolor after application to hot surfaces.

NEW EYE-PROTECTION GLASS

Eye protection glass named Didyium-Noviweld which permits welders to see operations from beginning to end despite blinding glare, is announced by the American Optical Co., Southbridge, Mass. The lenses also absorb ultra-violet and infra-red rays. Meet Bureau of Standards specifications for glare control. Available in three shades, Nos. 4, 5 and 6, corresponding with shade number of standard AO Noviweld lenses. Especially efficient in the flame welding of aluminum and steel.

MAN OVERBOARD FLOATING LANTERN

This is the name of a new product being introduced by the F. W. Wakefield Brass Co., Vermillion, Ohio. When it is thrown overboard along with a life buoy it automatically rights itself on contact with the water. Mercury switch closes the circuit and lamp is lighted showing location of buoy. Will burn for 22 hours. The lantern is said to meet Navy Specification.

BANTAM SIZE LIFT TRUCK

Center control telescopic lift tilting fork truck is new addition to materials handling equipment. Handles 2000 lb. loads with speed and safety. Has four speeds forward and reverse. Hoisting and tilting controls fitted with mechanical limit safety stops. Measures 98 inches from 30" fork tip to stern. Single fork lift 71½ inches, telescopic lift reaching to 129 inches. Made by The Yale & Towne Mfg. Co., Philadelphia, Pa.

FASTER GRINDING HARD STEELS

New precision grinding wheel of open, cellular construction announced by American Emery Wheel Works, Providence, R. I., is claimed to be a real metal-eater. Open, porous construction gives plenty of chip clearance and space for air cooling to cut hardest alloyed steels without loading or burning. It is said to cut freely and require minimum of dressing. In wet grinding, porosity enables it to carry extra coolant.

HEAVY DUTY SWIVEL CASTER

Heavy duty all steel swivel caster is announced by the H. L. L. Pitcher Co., sales agency, Rose Manufacturing Co., Detroit, Mich. Caster has drop forged base plate with king pin integral, Timken thrust bearing. Axle has hardened non-turning spanner bushing and Hyatt roller wheel bearing. Caster swivels on ⅜" chrome steel ball bearings in removable steel races. Oilites or other special bearings can be furnished.

BAND SAW COOLANT SYSTEM

Advantages of using coolants in metal cutting operations on horizontal type band saws are made possible by new coolant system offered by the Gray-Mills Co., 213 W. Ontario St., Chicago. Coolants increase saw speeds, make smoother cuts, reduce blade wear, and increase production. The system is designed to fit all types of horizontal band saws. Coolant is recirculated. System is easily attached or removed. Oil feed tube is slotted to fit saw blade.

USES BUT ONE LB. OF STEEL

Fluorescent light fixture employing but one pound of sheet metal as compared with 20 lbs. in all-steel fixture, has been developed by Scientific Lighting, Inc., Fond du Lac, Wis. Wood top channel will support more than 200 lbs. Total weight of 2-40 watt model is about 20 lbs. Electrical parts in electrical containers. Bal-

(Continued on page 124)

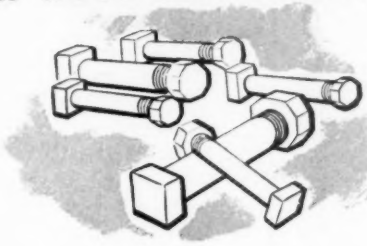
Welding piping with Tube-Turn fittings conserves 4 vital materials . . . checks war-time pipe failures, stops leaks!

NO. 4 OF A SERIES

HOW TUBE-TURN WELDING FITTINGS BENEFIT WAR INDUSTRY

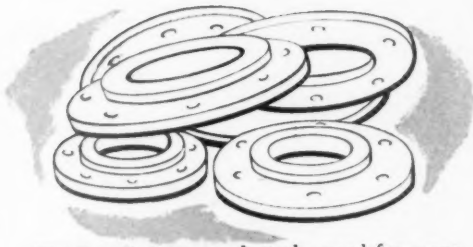
The FIRST WELDING FITTINGS AND STILL THE BEST

1. NUTS AND BOLTS



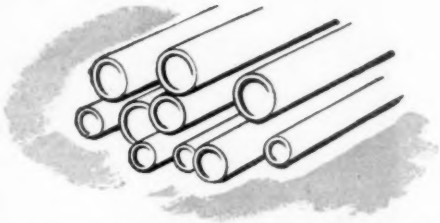
Joints welded with Tube-Turn fittings require no nuts or bolts. Maintenance time and trouble spent in tightening bolts is eliminated.

2. FLANGES



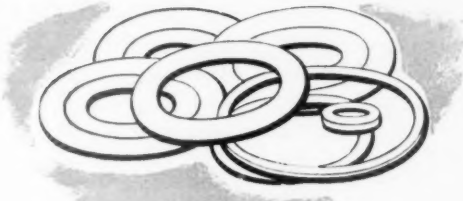
Welding fittings supplant the need for many of the flanged joints necessary in screwed piping—save both weight and critical metal.

3. PIPE REPLACEMENT



When welding fittings are used, you never have to replace any pipe because of worn threads or damage due to replacing flanged fittings.

4. GASKET MATERIAL



Fewer flanged joints mean fewer gaskets to replace. No materials or time wasted when connections are welded with Tube-Turn fittings.

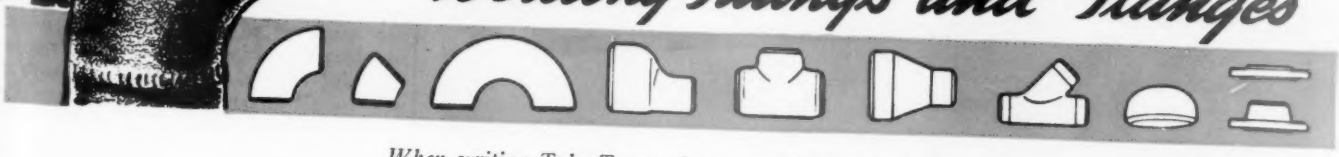
When you multiply these savings over an entire piping system, the amount of critical materials conserved is tremendous. Tube-Turn welding fittings aid the war effort in *other* ways, too—less danger of plant shut-downs due to piping failures; maintenance is virtually eliminated; less installation time is needed because alignment is easier, only simple butt welds are required, and complete sections may be pre-assembled then welded into position. For *stronger, lighter, permanently leakproof* piping systems—weld with Tube-Turn fittings!

Tube-Turns (Inc.) Louisville, Ky. *Branch offices:* New York, Chicago, Philadelphia, Pittsburgh, Cleveland, Dayton, Washington, D. C., Tulsa, Houston, Los Angeles. *Distributors in principal cities.*

TUBE-TURN

TRADE MARK

Welding Fittings and Flanges

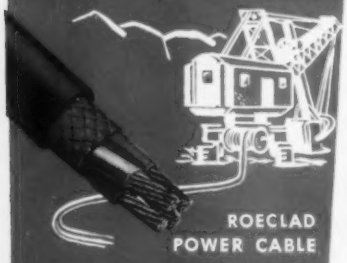


When writing Tube-Turns please mention Purchasing

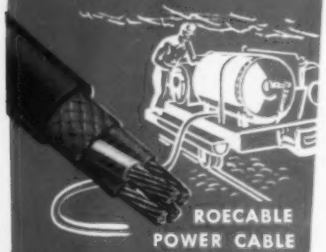
ROEBLING

Portable CORDS and CABLES

ROEWELD TRAILING CABLE



ROECLAD POWER CABLE



ROECABLE POWER CABLE

ROEBLING FLEXIBLE CORDS

ROESHEATH PARKWAY CABLE

TOUGH? you Bet!

but Uncle Sam says...

"TREAT 'EM CAREFULLY!"

1 REPAIR DAMAGES PROMPTLY

To repair a bruised cable jacket, cut away damaged insulation and taper or "pencil" back on each side to four or five times the thickness of insulation. Clean and apply insulating cement to taper and conductor. Wrap splicing tape to same thickness as original jacket. Patch vulcanize—but if this is not practical, apply tape to 2 inches beyond repair and finish as for splice, as explained below.

2 PIECE TOGETHER SHORT LENGTHS

To splice short cable lengths, cut back jacket and insulation from each end. Clean and splice the conductors. Taper or "pencil" back as for repair, to four or five times insulation thickness. Wrap splicing tape to same thickness as original jacket if patch vulcanizing is possible. If not apply friction tape overall, half-lapped to 2 inches beyond splice and finish with a waterproof paint.

JAR ROEBLING

JOHN A. ROEBLING'S SONS COMPANY

TRENTON, NEW JERSEY Branches and Warehouses in Principal Cities

(Continued from page 122)

lasts open mounted for low temperature and maximum light output. Reflector is of hard board, surface being finished with 300 deg. F. baked enamel, with reflectant factor over 85%. Fixture can be chain, rod or conduit mounted.

SPARE PARTS BOX

This box — an all welded construction job, was designed for manufacturers who have to ship assortments of spare parts along with the products they're making for the Army and Navy. Comes in a wide variety of sizes and styles. Each box is constructed to standard Government specifications, to meet different requirements. Manufacturer says can handle any gauge steel now being specifiied. Stackbin Corp. 96 Troy St., Providence, R. I.

MAKES TAPE WETTER

Aquaflux is name of material to mix with water in tape wetting devices, which is said to have the property of thoroughly wetting the tape all over, making the glue soft and varnishy immediately, thus making for better and more complete sealing of packages. Tape is said to hold better and faster. Teaspoonful is effective with up to a gallon of water. Especially effective in cold weather. International Products Co., Trenton, N. J.

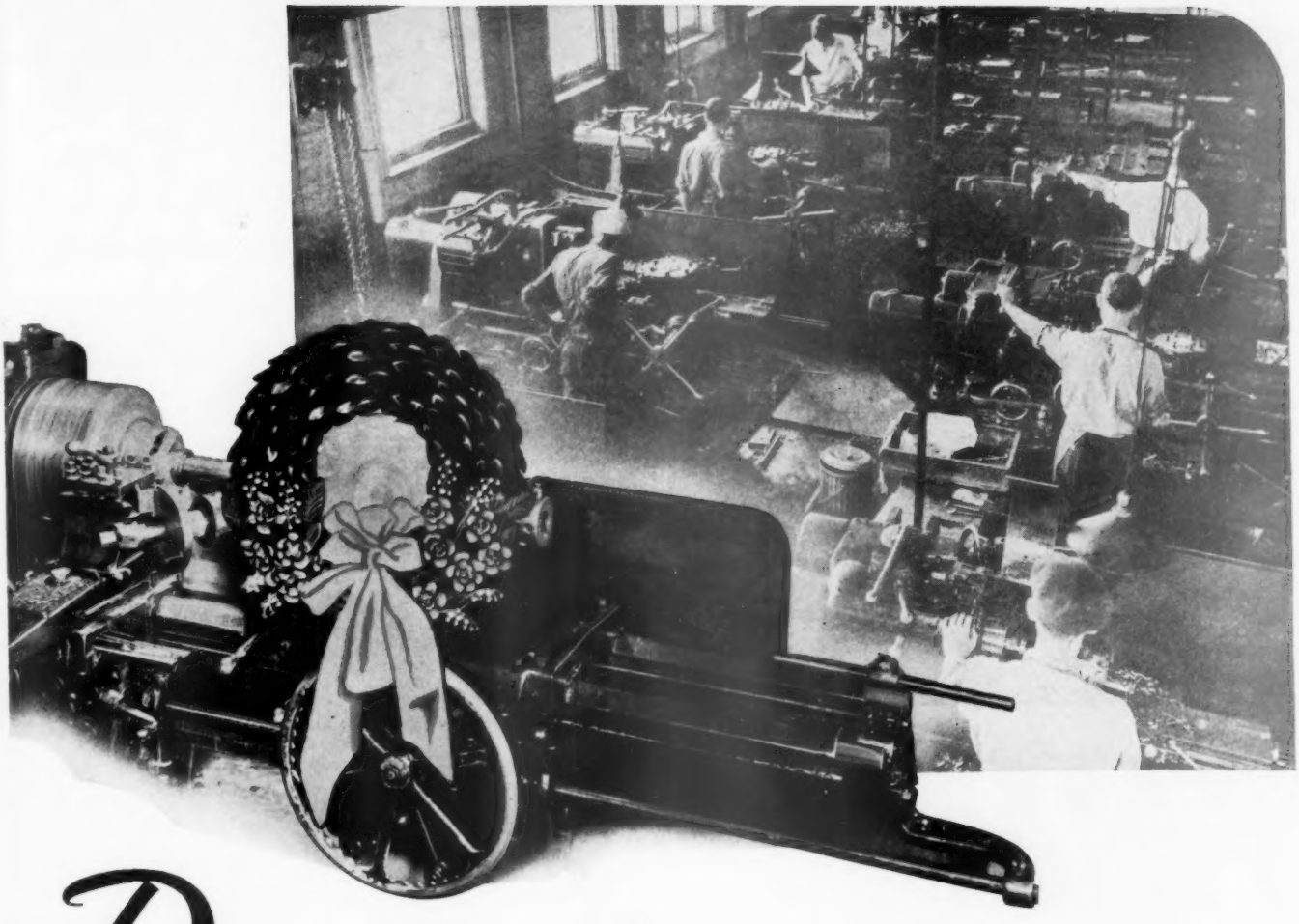
IMPROVED CHIPPING HAMMER

The Universal Tomhawk is announced by the Atlas Welding Accessories Co., Boulevard Bldg., Detroit, Mich., as an improved chipping hammer with the exclusive feature of interchangeable and replaceable cone, and chisel bits and handle, for all types of weld cleaning. Comes in two 10" models: standard, weight 11 oz., and heavy duty, weight 15 oz. Socket fit of bit shank, positioned and held by set screw prevents loosening.

PAPER PROTECTS AGAINST CORROSION

A new greaseproof, noncorrosive paper has been announced by Sherman Paper Products Corp., Newton Upper Falls, Mass., for protecting highly finished parts against corrosion. It is called V-26, and is described as new development in the packing of war materials which eliminates multiple wrapping operations at point of use. It is said to meet or surpass all government specifications for

(Continued on page 126)



Decoration...for INDIFFERENCE

No medals . . . no wound stripes . . . no citations for the men on the industrial casualty lists!

They are maimed or killed . . . just as surely as if by snipers' bullets or enemy bombs . . . by carelessness, or ignorance, or indifference. And the appalling fact is that day after day these home front casualties keep mounting . . . more, many times more than are reported from the fighting fronts.

For forty years, Youngstown has had an active Safety Program in all its plants. Today, facing increased hazards of war production on the one hand and the need for maximum effective manpower on the other, we have redoubled our efforts to educate and protect our workers. We subscribe to and give our fullest support to the work of the National Safety Council.

As customer, prospect or friend, we urge that you, too, get behind this work. Enroll in the cause of the National Safety Council. Send a subscription to National Chairman Wm. A. Irwin, 71 Broadway, New York City, for the War Production Fund to Conserve Manpower. Do all you can to help America win this war on the home front.

QUALITY TRADE MARK YOUNGSTOWN SERVICE

THE YOUNGSTOWN SHEET AND TUBE COMPANY

YOUNGSTOWN, OHIO

FOR VICTORY BUY UNITED STATES WAR BONDS AND STAMPS

When writing The Youngstown Sheet and Tube Company please mention Purchasing

STARRETT TOOLS

HELP SKILLED HANDS TAKE THE MEASURE OF THE AXIS

Getting tools of Starrett accuracy and dependability into these hands has been a task worthy of the supreme efforts of every Starrett toolmaker. On that task we shall continue to concentrate our skill and experience without stint.

Your mill supply distributor is likewise doing everything he can to help you procure the Starrett precision tools you need. You may depend upon him.

THE L. S. STARRETT CO., ATHOL, MASSACHUSETTS, U. S. A.

World's Greatest Toolmakers

STARRETT

PRECISION TOOLS • DIAL INDICATORS • GROUND FLAT STOCK
HACKSAWS • METAL CUTTING BANDSAWS • STEEL TAPES

(Continued from page 124)

greaseproof, noncorrosive papers. Inner-ply provides greaseproof barrier, and strong outer ply protects greaseproof membrane against damage in transit. Creped for flexibility. Available with outer film of wax, or uncoated where the self-tack quality is not needed.

COOLANT PUMP WITH TANK

Combination portable coolant pump with tank is announced by The Eastern Engineering Co., New Haven, Conn. Unit can be installed as permanent equipment. Replaces method of applying coolant by hand. Flow of coolant can easily be regulated. It is designed for use on lathes, shapers, milling machines, drill presses, grinders, tappers, etc., where a steady stream of coolant or cutting oil is necessary. Coolant pump combination is available in portable type with flexible metal hose and control valve or for permanent mounting.

HATCHET TYPE SOLDER IRON

New soldering iron known as the hatchet or offset type, which is said to give better balance on certain soldering operations and to decrease operator fatigue, is announced by the Hexacon Electric Company, Roselle Park, N. J. The iron comes in wattages of 80, 100, 175, and 200. Tip sizes are ⅜", ½", and ⅝". The iron is of the plug type with replaceable elements and tips.

SPONGE RUBBER GASKET

The creation of a sponge rubber gasket covered with a smooth coating of natural rubber of Ameripol synthetic rubber by the extrusion process is announced by the B. F. Goodrich Co., Akron, Ohio. Ameripol cover withstands the destructive action of oils and greases. Gasket has much lower permanent set than tubular type heretofore used on refrigerators and automobiles. Maximum production length is 12 feet. Most practical at present in dimensions not smaller than ¼" nor larger than 1½". Can be produced with lip for attachment.

FIREPROOF SWEEPING COMPOUND

Fibre-Tex is the name of floor cleaning compound made by Lacey-Webber Co., Kalamazoo, Mich., which is claimed to eliminate danger of fire, as it will not burn. It is

(Continued on page 128)

Safety Goggles
FOR EVERY OCCUPATION

There are Bausch & Lomb Safety Goggles designed to meet the specific conditions created by different occupations. By meeting those specifications B&L Safety Goggles increase workers' efficiency while providing maximum protection against eyesight hazards.

These safety goggles are available in sizes to fit any worker—in types best suited to every job—in clear, Ray-Ban or Arc-Ban Glass, whichever conditions indicate. Bausch & Lomb Optical Company, 681 St. Paul Street, Rochester, N. Y.

A partial list of applications for Bausch & Lomb Safety Goggles

Acetylene Cutters and Burners	Drillers	Heat Treating Workers	Polishers	Spot Welders
Acetylene Welders	Dust Workers	Jointer Operators	Pourers	Sprayers
Acid and Caustic Handlers	Electrical Workers	Ladle Men	Quarrymen	Steam Boiler Operators
Aluminum Welders	Explosive Plant Workers	Linemen	Railroadmen	Steel Blowers
Brazers	Factory Instructors	Machinists	Riveters	Stone Dressers
Buffers	Firemen	Melters	Rollers	Supervisors
Bus Drivers	Flour Mill Workers	Miners	Sand Blasters	Tappers
Cement Plant Workers	Forgemen	Mixers	Scalers	Trainmen
Chippers	Foundry Workers	Office Workers	Scarfers	Truckers and Helpers
Circular Saw Operators	Furnacemen	Painters	Scrapers	Welders
Construction Workers	Galvanizers	Picklers	Setup Men	Welders' Helpers
Cranemen	Grain Elevator Workers	Plant Supervisors	Shaper Operators	Welding Setup Men
Dippers	Grinders	Platers	Shipping Clerks	Wreckers
Drill Press Operators	Hand Tool Workers	Pneumatic Drill Operators	Shipyard Workers	

Remember that Bausch & Lomb Safety Goggles can be supplied with lenses ground to any individual prescription!

BAUSCH & LOMB
Safety Goggles

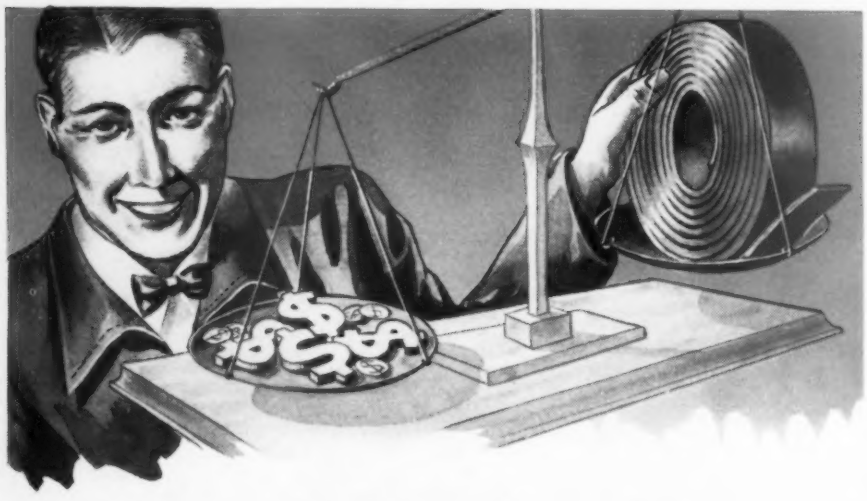
When writing Bausch & Lomb Optical Company please mention Purchasing

(Continued from page 126)

said to be highly absorbent of oils and grease and to have active cleaning effect on floors, thus contributing to easier plant house-keeping. It is recommended for use wherever oil or grease may be spilled on floors.

V-BELT DRIVEN CARBIDE GRINDERS Two new belted type carbide tool grinders are announced by the Hammond Machinery Builders, Inc., Kalamazoo, Mich. Model 4-B Combination chip breaker and cup wheel grinder has multi-V-belt drive. With this drive there are no electrical specification limitations. Machine has any-angle vise of double cradle design which permits means of angle tool holding also, silicon carbide cup wheel and 8 x 14" tilting table. Model 6-B is of same general construction, provides cup wheels on both ends, and has large 8 x 14" surface ground tilting table.

LONG-LYFE BLAST NOZZLE New American-Heanium Nozzle is announced by American Foundry Equipment Co., Mishawaka, Ind., as low-priced nozzle for hundreds of hours of service. Nozzle insert is a ceramic of nearly diamond hardness said to be extremely dense and of good mechanical strength. Orifice wears slowly and does not "bell out rapidly", with result that air velocity and contour of blast stream are held very uniform. Jacket is made of patented abrasion-resisting alloy steel.



HOW DO *YOU* BUY BELTING?

Do you pay so much a foot, and get just belting? That way is expensive, if the belting cannot stand up against abuse and "green help" and still deliver maximum performance.

The economical way to buy belting is to specify—SCHIEREN! Into every one of our belts we incorporate over 75 years of "know how." And every step in the building of a SCHIEREN BELT—from the treatment of the leather fibres. . . to the cementing together of perfectly tanned sections—is performed by our craftsmen with the purpose of delivering maximum power, under adverse conditions, for years and years of dependable service.

You can settle the belting question for yourself, permanently. Take any two similar drives. Place a SCHIEREN LEATHER BELT on one of them. The better performance and longer life of the SCHIEREN PRODUCT will convince even a skeptic. When would you like that demonstration? There is a distributor near you, or write—CHAS. A. SCHIEREN COMPANY, 31 Ferry St., New York, N. Y.—60 Front St. W., Toronto, Canada.

SCHIEREN DUXBAK BELTING TRADE MARK

LEATHER BELTINGS • SPECIALTIES AND HYDRAULIC PACKINGS

CHICAGO - SALT LAKE CITY - LOWELL - DENVER - DALLAS
NEW YORK - PITTSBURGH - PHILADELPHIA - NEWARK

FLUORESCENT REFLECTOR FASTENING

To save time and trouble in installing and cleaning its new line of composition reflector fluorescent fixtures, Sylvania Electric Products, Inc., Salem, Mass., announces the "Captive Latch", a powerful spring-type fastening that holds the reflector securely to the top housing. Requires only a quarter turn to remove reflector. Cannot become loose and drop out; is inconspicuous; and is said to assure easy and quick removal of reflectors no matter what the type of installation.

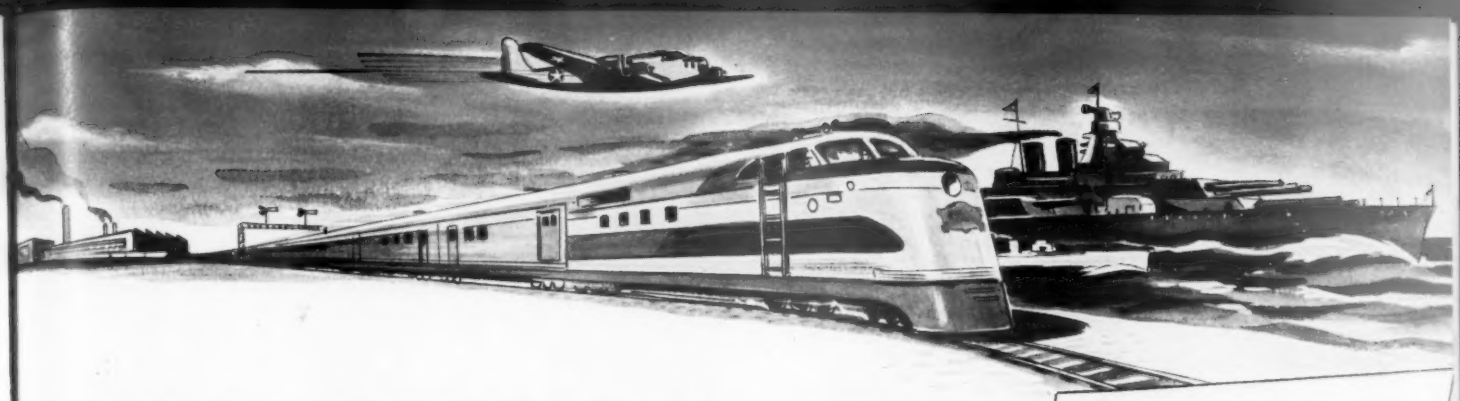
DRILL HAS PLASTIC HOUSING

Portable electric drill with plastic housing is announced by the Independent Pneumatic Tool Company of Chicago. Housing does not support any of the operating parts. Inner parts are supported by sturdy skeleton frame. Field case, gear case and grip handle are made of "Thorite" plastic, developed for Thor. Drills are said to have greater strength, better protection from shock, and more power per pound. Available in three speeds. Weight is three pounds, three ounces; length 8-3/16 inches; heavy duty drilling capacity, ¼". Available to all war industries.

NEW THREE-LAMP BALLAST

The development of a three-lamp, 40-watt, high-power-factor ballast for fluorescent lighting of war plants, is announced by General Electric Company, Schenectady, N. Y. The new 3-lamp ballast is said to be better adapted to installation in a fixture than two-separate ballasts, and the use of one ballast instead of two simplifies installation and reduces the amount of wiring required for connections. Power factor is 90% or above.

(Continued on Page 130)



INTO BATTLE FASTER

when it's *stencil* marked!

Your shipments get to their destination only if they are properly marked. According to railroads and the express company, millions and millions of dollars of shipments *never* get delivered because of improper marking. Much of this loss in money, and, more vital *today, loss of merchandise* and *time,* can be saved by proper marking. To insure quick, exact delivery to get your products into battle faster . . . the address should be STENCILED.

MARSH STENCIL MACHINE with *finger-tip* control . . .

A Marsh Stencil Machine in your shipping room will save from $10 to $50 per month in time spent on marking. Even though you may have new, inexperienced help, the "Sure Set" Marsh feature makes it simple to cut a stencil . . . and cut it correctly. The "finger tip" control makes it easy for even a girl to operate. Marsh Stencil Machines are available for prompt shipment on priority. We invite your inquiries. No obligation.

MARSH FOUNTAIN BRUSH, OIL BOARD, FELT TIP MARKER & STENCIL INK

FOUNTAIN BRUSH: Perfect control of ink feed assures neat, clean-looking shipments.

OIL BOARD: Cuts easier . . . lasts longer. Lubricates punch and dies when cut.

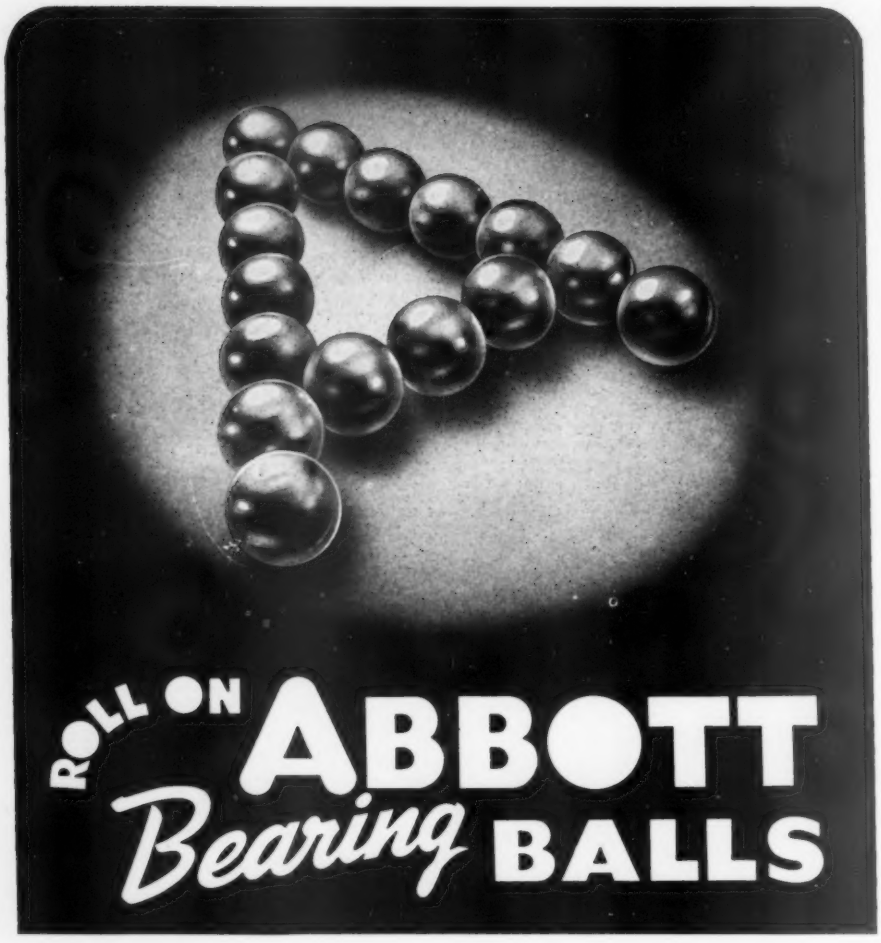
FELT TIP MARKER: Automatically inked for PRINTING or writing. Used like a pencil.

STENCIL INK: Fast drying, waterproof. Colors: black, red, white, blue, yellow, green.

WRITE . . . WIRE . . . OR PHONE

MARSH

MARSH STENCIL MACHINE CO. • 37 MARSH BLDG. BELLEVILLE, ILL.



STAMINA is Vital

Achieve it with Abbott Bearing Balls in your assemblies. Rely on these performance-proved components to contribute to and safeguard the dependability expected of YOUR OWN products.

You'll gain by making Abbott Bearing Balls your partners in performance. They're carrying the load in all kinds of heavy duty mechanisms that keep war products on the move.

Tell us your requirements so that we may estimate deliveries for you. We can supply the grade of ball that will match your own Standard of Precision.

KEEP 'EM ROLLING!

THE ABBOTT BALL COMPANY
HARTFORD, CONN. U. S. A.

(Continued from page 128)

Ballasts are designed to operate on lighting circuits of 110-125, 199-216, 220-250, and 240-280 volts.

ELECTRONIC TUBE CONNECTOR

New electronic tube stud connector known as the Hy-stud, has been developed by the Burndy Engineering Co., 459 E. 133rd St., New York, for use in joining flexible leads to filament studs of large electronic tubes. Unit is said to give maximum compactness. It is assembled to the stud by means of a knurled thumb screw.

EMULSION TEMPERATURE SIGNALS

Templilaq is name of emulsified compound heat indicator for use in welding, heat treating and other processes requiring controlled application of heat. Daubed on working surface, dries and when thermal rating is reached, the smear liquifies, and is said to accurately indicate temperature. Available in two ratings—125 deg. to 350 deg. F. in 25 deg. intervals, and from 350 deg. to 1600 deg. F. in 50 deg. intervals. It is claimed to work equally well on metal, glass, ceramic, plastic or wood surfaces. The Tempil Corp., New York.

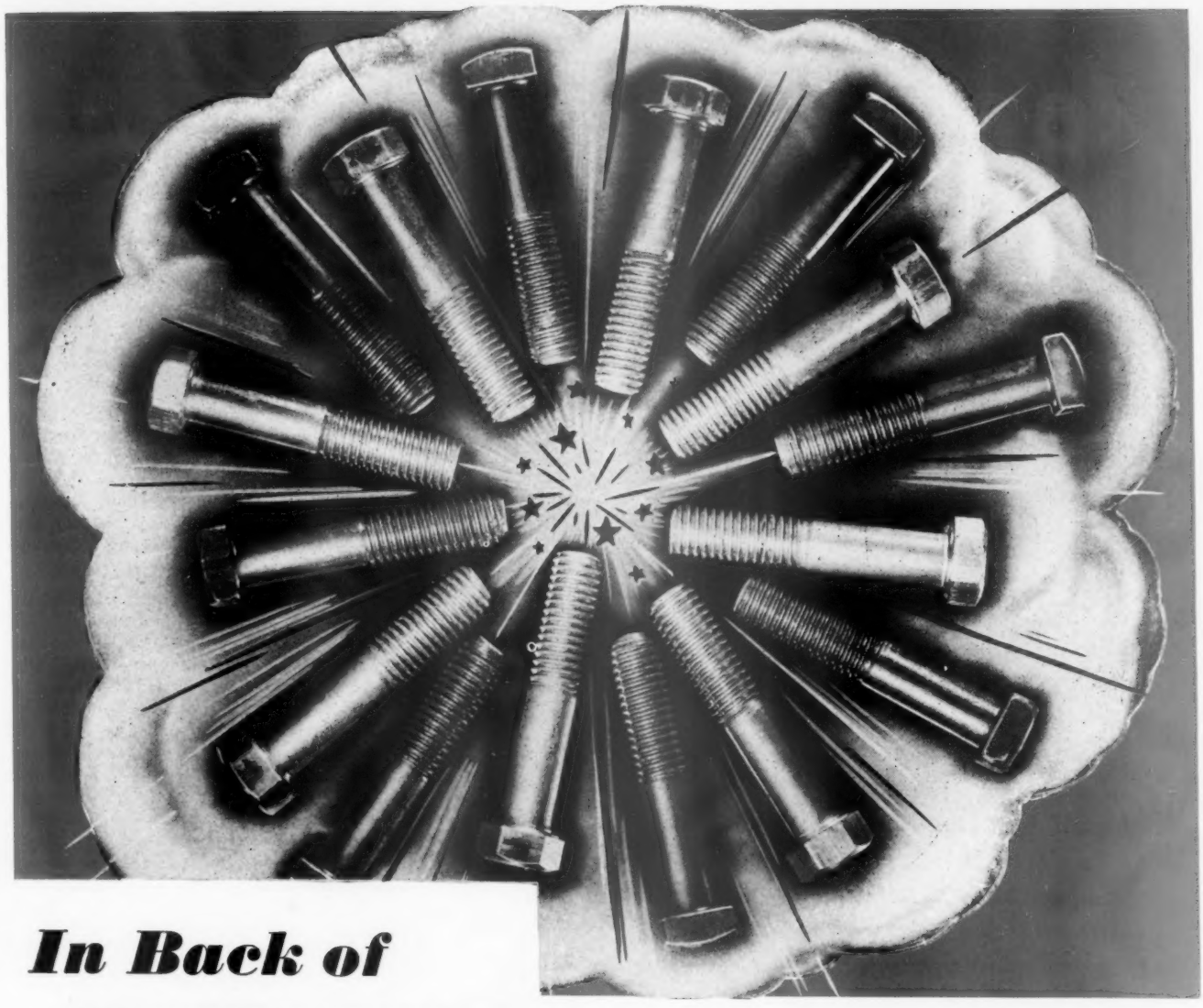
NEW HEAVY DUTY DRILL

New model "47" Skildrill, designed to speed up tough "skin-drilling" in airplane construction, is announced by Skilsaw, Inc., 5033 Elston Ave., Chicago. It is said to be ideal for production drilling jobs up to ¼" in steel and ½" in wood. Weighs 3½ lbs., is 7¼" long and 8-9/16" wide. Extra-power Universal motor available in four speeds—1800, 2500, 3500 and 5000 RPM.

LOW PRESS. FLOW TRANSMITTER

Cochrane Style N Transmitter for use with its standard electric meter receiving unit is announced by Cochrane Corp., Philadelphia, Pa., as being designed for measurement of low static pressure gases where low differential and resultant low permanent pressure loss are of first importance. It is designed for differentials of 2, 4, 6, 8 or 10 in. of water.

(Continued on page 132)



In Back of BURSTING BOMBS . . .

IN BACK OF EVERY BOMB and bullet, the humble bolt, nut, cap screw and lock washer, is playing a vital and important part in hastening the day of Victory.

Right down the fighting line to its very source . . .

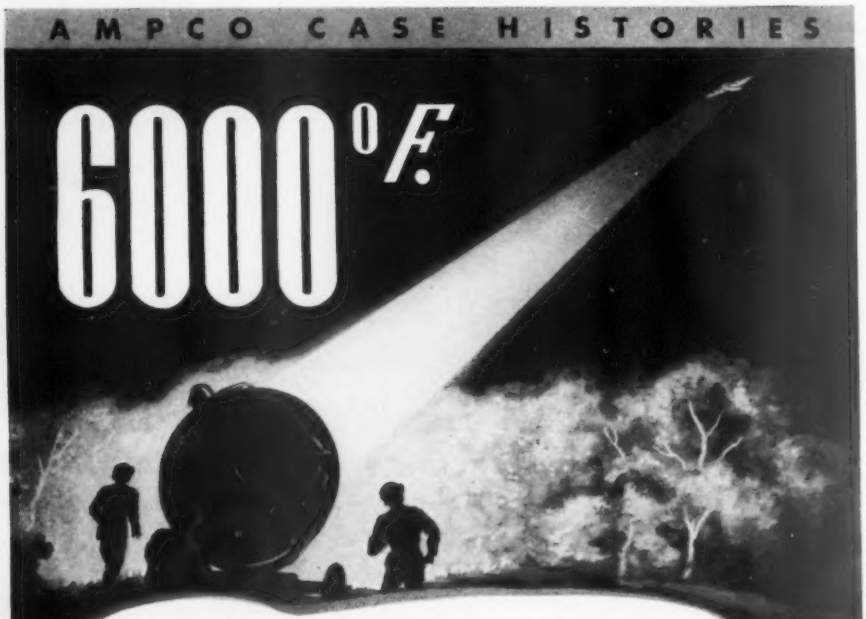
In bomb racks, guns, tanks, trucks, ships and into the very birth of war machinery producing equipment, Wasmer Tru-Fit Products are contributing a tighter, stronger, tougher, shock-proof fit. Of necessity, Wasmer production is dedicated wholly to our Nation's war effort . . . we believe thereby hastening Victory and the return of Peace.

15600 ATHENS AVE., CLEVELAND, OHIO, U. S. A.

WASMER
BOLT & SCREW CORP.

When writing Wasmer Bolt & Nut Corp. please mention Purchasing

AMPCO CASE HISTORIES



Yet AMPCO METAL as carbon arc holders in military searchlights withstands this intense heat

In military searchlights the fumes and heat reflected from the 6000° F. arc flame cause ordinary carbon electrode holders to pit and oxidize rapidly. Made of Ampco Metal, the service life of these holders is greatly extended. Here the "unusual factor"—plus Ampco's ability to stand up under adverse conditions — dictates the continued use of Ampco Metal by the manufacturers of this equipment.

In many other fields also — where material is subject to wear, fatigue and failure — Ampco Metal has proved its ability to give genuine service. Over 2000 customers — the cream of the war production plants of the country — use Ampco bronzes regularly.

You may have unusual conditions that require a sturdy, reliable bronze. Test Ampco Metal under actual operating conditions and the results will justify your judgment. Send for Catalog 22 today, describing this unusual bronze.

AMPCO METAL, INC.

DEPARTMENT PA-4 MILWAUKEE, WISCONSIN

AMPCO METAL

THE METAL WITHOUT AN EQUAL

When writing Ampco Metal, Inc. please mention Purchasing

(Continued from page 130)

Bell casing is designed for maximum working pressure of 75 lbs. p.s.i. Design permits quick and easy cleaning.

AIR AND OIL DUCT CLAMPS

To help aircraft manufacturers meet production demands, Marman Products Co., Architects Bldg., Los Angeles, Cal., claim to have developed revolutionary new type of air and oil duct clamp. Advantages stated are positive equalized circumferential loading; can be used over and over as clamping efficiency is maintained indefinitely; saves man-hours and speeds production. Built for high pressure hot or cold installations for aircraft, automotive, tank or marine engine assemblies.

"PLUS-FIVE" DIAMOND TOOL

New Patented diamond tool developed by the Larco Tool Division of Louis A. Roselaar, 551 Fifth Ave., New York, is said to offer outstanding advantages. Operator can reset point of diamond in fractions of a minute. It is made so that on any of the six interchanges of point, the octahedron diamond is always in dead-center. Comes with one cap for a specified size diamond or with several caps for varied sizes. Holder may be retained indefinitely for continuous use on dressing jobs.

SMALL OUTDOOR TRANSFORMERS

General Electric announces a new line of two-bushing outdoor potential transformers, Type E-236, rated 24 to 69 kv, 50/60 cycles, which effect substantial reductions in size. Height of the new transformers (which supersede Type E-116) has been reduced 15 to 50%, weight has been reduced 10 to 60%, and liquid volume, 45 to 90%, depending on rating of transformer. Described in detail in Publication GEA 3982.

SPECIAL WORK ILLUMINATORS

New line of special industrial work illuminators, magnifying and inspection units, said to expedite and facilitate difficult operations on small parts and inaccessible locations, is announced by Acro Tool & Die Works, 5324 No. Kedzie Ave., Chicago. Work illuminators comprise many different types of highly specialized lamps for permanent or port-

(Continued on page 136)

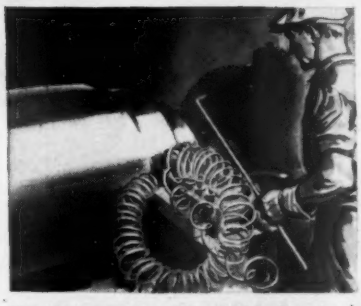
FIRTHITE SHOWS HOW..

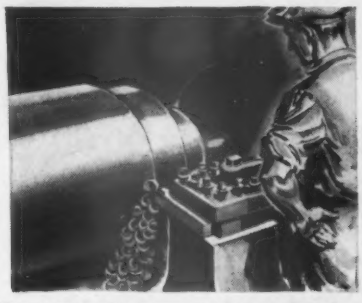
TO BREAK UP YOUR ALLOY-STEEL CHIPS AUTOMATICALLY FOR SAFETY AND PROFIT

CHIP CONTROL. The rapid machining of **alloy steel** requires effective means of controlling chips. Long, hot, tough chips endanger the operator, make chip disposal difficult, reduce the value of scrap (by $2.00 a ton), cause tool breakage, and delay work.

The remedy is properly designed chip breakers. Tools with chip breakers require a little more power but, where long chips are a problem, chip breakers are the answer.

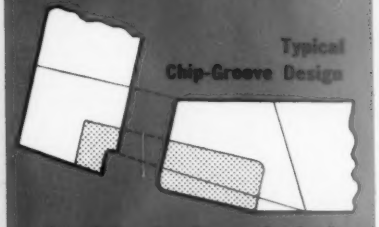
Aside from the safety factor, chips that can be **shovelled** are readily marketable as scrap, command a higher sale price per ton, and—most important to the war effort—speed the **recovery** of scarce and critical alloys.





NO CONTROL without Chip Breaker OR CHIP CONTROL with Chip Breaker

HOW TO GRIND A CHIP BREAKER EASILY, QUICKLY, INEXPENSIVELY



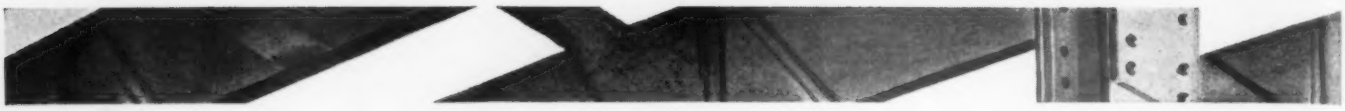
A quick, simple method of designing and grinding chip breakers, as illustrated, is described on pages 41 to 43 of the FIRTHITE Users' Handbook...or a FIRTHITE Engineer will gladly discuss chip control in your plant.

Firth-Sterling STEEL COMPANY

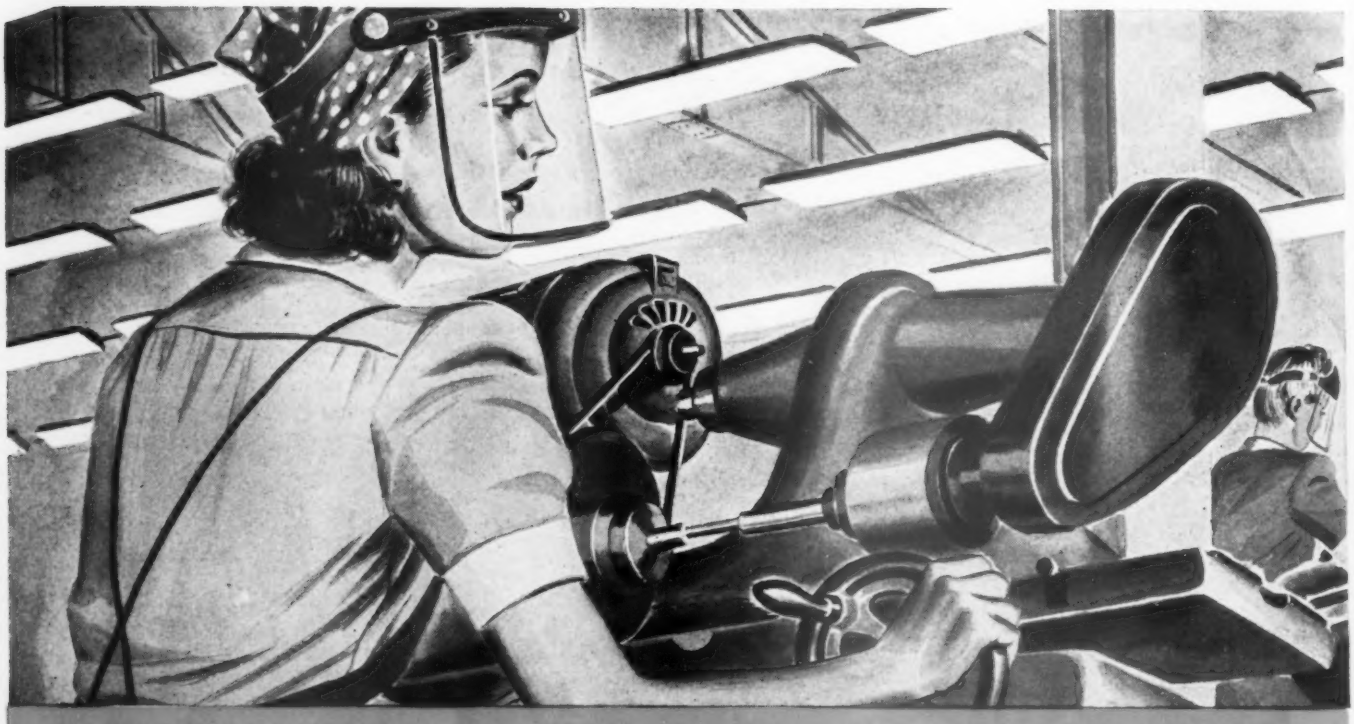
MAKERS OF FIRTHITE TUNGSTEN-TITANIUM CARBIDES FOR STEEL CUTTING

Offices: McKEESPORT, PA. NEW YORK - HARTFORD - PHILADELPHIA . CLEVELAND - DAYTON - DETROIT - CHICAGO - LOS ANGELES

When writing Firth Sterling Steel Co. please mention Purchasing



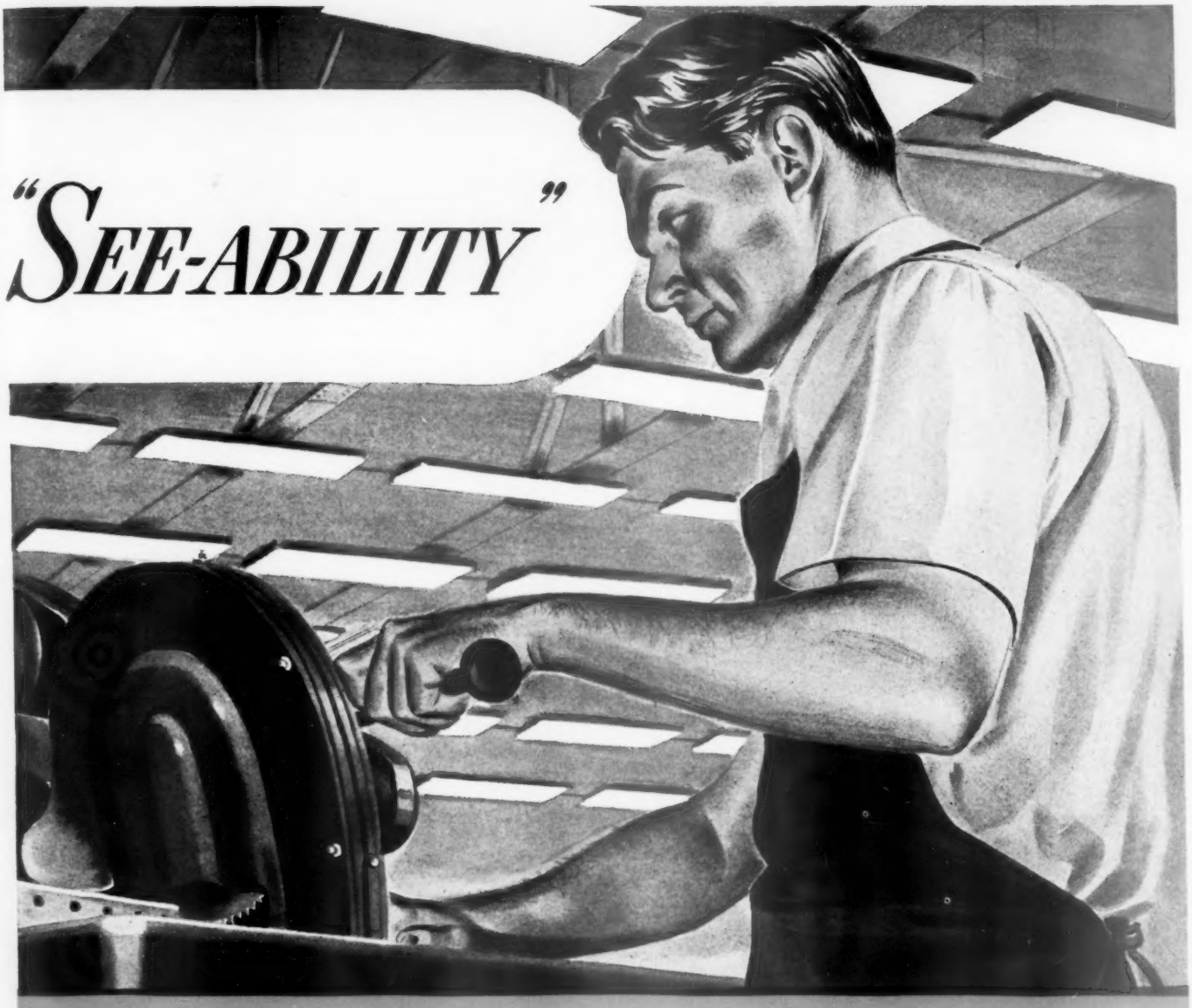
Conserve lamps for *WAR-TIME*



To maintain high levels of "See-ability" in our war factories, millions of lamps are needed, lamps requiring tungsten, copper, and other vital materials. You can help make these lamps available. Turn lights out promptly, when not in use. Keep bulbs and reflecting surfaces clean. Make periodic check-ups to be sure that your present lighting equipment is at peak efficiency.

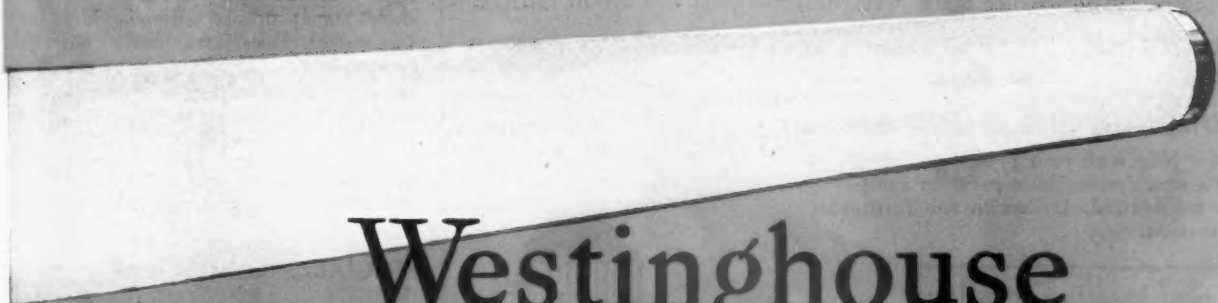
"SEE-ABILITY" helps increase war production

When writing Westinghouse Lamp Division please mention Purchasing



"SEE-ABILITY"

By conserving in these ways, you help provide "See-ability" for war workers. They need good light to avoid accidents and lost time. They need high levels of "See-ability" to prevent damage to machinery and materials . . . to increase war production. Every extra bit of light you get from your present lamps is therefore a direct saving of a vital product for winning the war. Westinghouse, Lamp Division, Bloomfield, N. J.



Westinghouse

★ MAZDA LAMPS ★

FOR GREATER "SEE-ABILITY"

When writing Westinghouse Lamp Division please mention Purchasing

When You Need Machined Wood Parts

...turn to BRUCE!

Look to *Bruce* for the answer to your *wood parts* problems—in these days of restricted manufacture of metal, rubber and plastics! E. L. Bruce Co. is in a position to manufacture a variety of wood products—is specializing in quantity production on solid or glued-up wood parts, either completely or partially machined.

FACILITIES—Seven modern plants, centrally located for timber and transportation. Complete and efficient woodworking machinery of all types, including new box plant at Bruce, Miss.

EXPERIENCE—Bruce has a background of more than 25 years in the lumber industry. It has pioneered many important wood developments.

PERSONNEL—Over 3,000 skilled workmen and most capable key men. Free technical and advisory service under the direction of one of the country's leading wood experts.

DEPENDABILITY—Individual orders ranging up to a million dollars and more delivered exactly on schedule. Highest financial and credit ratings.

E. L. BRUCE CO. • 1522 N. Thomas Street • Memphis, Tenn.

SEND US YOUR INQUIRIES

For our help with your problems, simply send a description, blue print or sample of items needed. Or write for further information.

BRUCE *Specializing* **IN WOOD PRODUCTS**

MANUFACTURERS OF BRUCE STREAMLINE FLOORING

(Continued from page 132)

able application. Illuminating magnifiers are said to provide magnification and light in correct combination simplifying assembly and inspection of tiny parts.

FOR MARKING SMALL PARTS

Small knurled head thumb screws, cap screws, nuts and similar parts that are too small to number or otherwise mark except with elaborate equipment, are said to be easily and economically marked with new Hercules No. 2 outfit, announced by the Acromark Company, 384 Morrell Street, Elizabeth, N. J. Range of marking runs from approximately 15-1/16" characters in one line or 30 in two lines up to four characters ½" in size in one line. If material is soft these limits may be exceeded, say on fibre or plastic checks.

LISTS ITEMS IN PRODUCTION

Hydraulic equipment catalog issued by the Blackhaw Manufacturing Co., Milwaukee, Wis., lists only those items scheduled for production. By omitting products "discontinued for the duration", the book aims to eliminate delays caused by orders on which practical substitutions must be arranged. Catalog runs 12 pages and replaces eight peacetime bulletins. Simplifies war-time buyer's job with added specifications and answers to questions. Catalog is No. V-43.

WORKS IN DAYLIGHT BLACK-LIGHT & NO LIGHT

Signalette is the name of indicator introduced by Littelfuse, Inc., 4757 Ravenswood Ave., Chicago, that functions by reflected light and radio activity. Operates by fluorescence under "black light". Radium-active fluorescent paint shows signals in total darkness. Uses only 1.5 watts. Does away with blur occasioned by transmitted light as from lamps. Indication is free from glare in daylight as well as night-time use. Makes signals correspondingly brighter in strongest light. Has non-shatterable protection.

SPECIAL INDEX DIVIDING HEAD

Hilco Universal cutter - grinder, which comes with interchangeable table or flat bed attachment and special universal index dividing head, is said to have extreme flexibility, quick-low

(Continued on page 138)

DOWNED! BY THE 17,901st?

GUNS BLAZE in the dark sky. That boy up there trusts his own skill and courage—and the many thousands of metal parts that keep his plane strong and flying against heaviest odds.

What if some tiny part *we* helped to make turns traitor in mid-battle?

If we could only see those tracer bullets sow red death across the cockpit, feel with him his sharp and lonely peril in the sky . . .

We'd say, "Our pay is still the comfort of our homes; his pay hot lead, night battles, chance of flaming death."

We'd say, "If we don't give the best we've got, our smallest failure is a crime against the life he scarcely lived and gladly risked for us."

And so we pledge: to make each metal part that keeps him fighting *true* to the minutest fraction; to conserve our metal; to work with our best skill; to think with precision; and so keep faith with those who do our fighting.

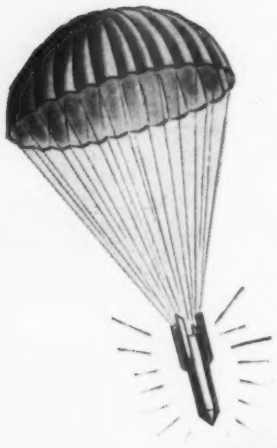
In this spirit, we at R B & W pledge ourselves to strength and accuracy in the millions of Empire bolts and nuts that we are making to hold American war equipment together. To R B & W's special manufacturing processes, developed through the years, we add the personal energy and care that forms an essential part of R B & W's contribution to Victory.

Reproductions of this ad re-arranged with a slogan for your War Production Drive, are free, upon request. Write Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, N. Y.

RB&W *Making strong the things that make America strong*

RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY

When writing Russell, Burdsall & Ward Bolt and Nut Company please mention Purchasing



FOR LIGHTING THE WAY TO THE TARGET

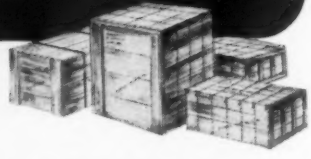
BEFORE parachute flares are ever called upon to light up a nocturnal target, they must travel thousands of miles over land and sea—withstand rough handling and other transportation hazards. Engineered containers provide adequate protection to parachute flares as well as other vital shipments . . . assure arrival in perfect condition.

General Box engineers are helping scores of manufacturers determine the shipping container best suited for their products. They have aided many war product shippers in deciding which of the allowable alternate specifications would give them the best results. Their knowledge of the availability of required materials has been of practical assistance to many others.

If you have a shipping container problem, write us. We may be able to help you assure fast, safe packing and shipping for your war products.

For manufacturers of war products: General Heavy Duty Wire-Bound and Nailed Wooden BOXES *and* CRATES
For Domestic Service: Corrugated BOXES *and Wood Cleated Fibreboard* CRATES
Discontinued for the Duration: Generalite and Nailed Strapped BEVERAGE CASES

GENERAL BOX COMPANY



GENERAL OFFICES: 48 West Illinois Street, Chicago, Illinois
DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, Winchendon; Continental Box Company, Inc.: Houston, Dallas.

(Continued from page 136)

cost set-ups without disturbance to production grinders, wide cutter range and absence of vibration. Dividing head has seven index circles of micrometer placed holes or stops said to insure perfect uniformity of cutting edge regardless of conceivable position may be quickly set up to accomodate any type cutter. Berco Manufacturing Co., Chicago.

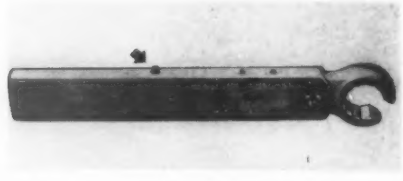
WASHABLE PAPER MASKS & CAPS

Washable paper dust masks and caps made of vegetable fibre paper which it is claimed may be stitched, washed and ironed, like fabrics, are announced by the Aldine Paper Company, 375 Fourth avenue, New York. Though paper is porous, dust particles of ordinary size will not penetrate it. The caps are cool; drawstring permits adjustment for all head sizes.

LIGHT-WEIGHT DECKING MATERIAL

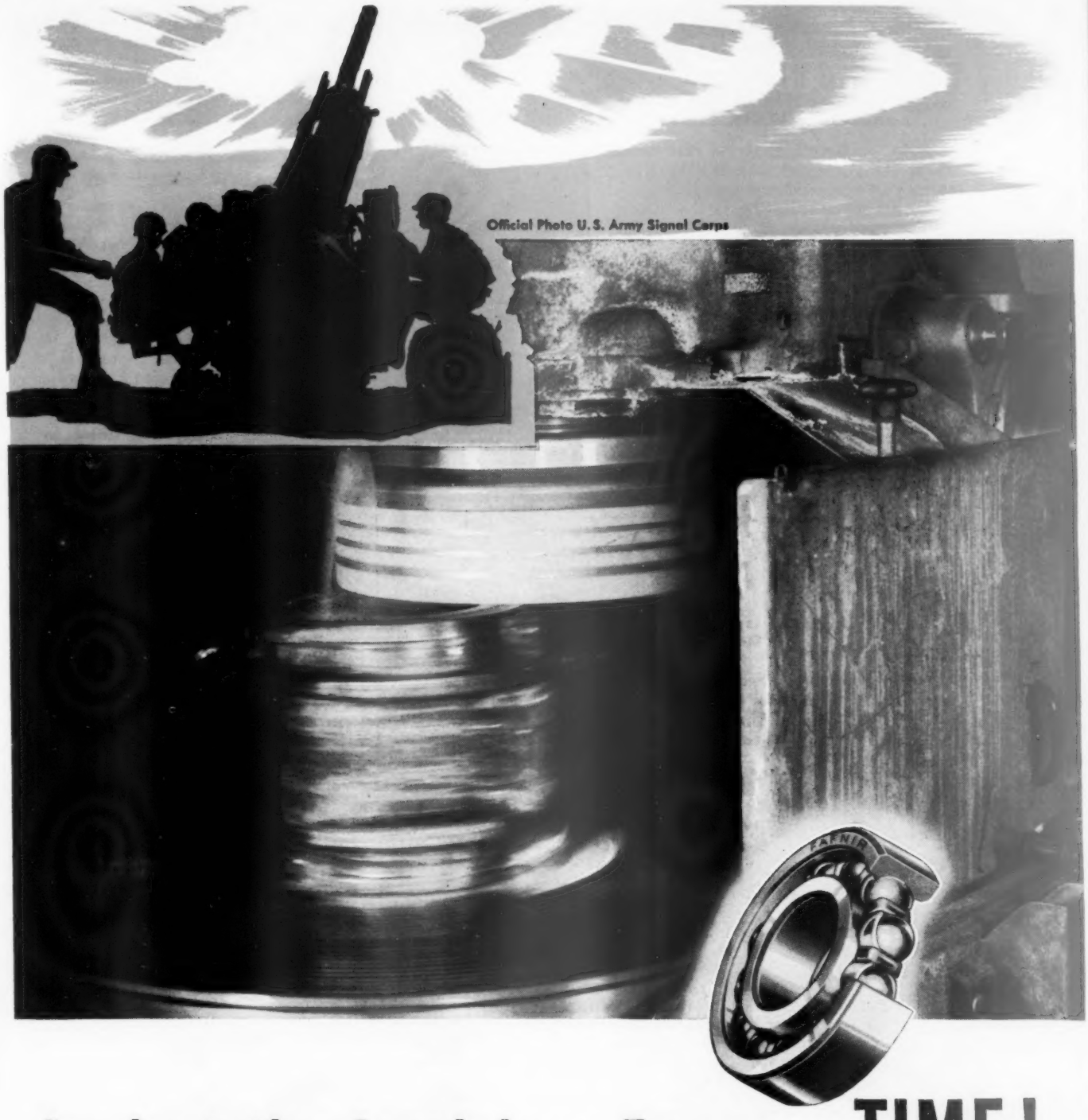
"Dektred" is name of new lightweight decking material announced by Goodyear Tire & Rubber Co. It is produced in a thick liquid and applied by spraying or with steel trowel. Can be used on metal, wood, concrete and other types of surfaces. It is said to be resistant to action of oils, greases, salt, gasoline, sulphur and cleansing detergents. Provides non-slip floor covering. It is especially adapted to war and cargo ships. Single spray or trowel in medium gauge will weigh less than 1½ oz. per sq. ft. when dry.

SNAP-ACTING TORQUE WRENCH



New snap-acting torque wrench which gives both an audible and physical signal when the proper predetermined torque load is reached, is offered by Tubing Seal-Cap, Inc., 215 West 7th St., Los Angeles, Calif. It is sold under the trade name Livermont Torq-Snap. Requires

(Continued on page 140)



Against the Avaricious Enemy... TIME!

The life of a gun in battle is short. The useful span of a bucking jeep is measured in hours. No more is expected... it's the fortunes of war. In another battle, here at home, we're fighting with machines that *CAN'T* be readily replaced... their working life must run into untold hours to keep up the steady flow of armament our fighting men need. So, their enemy is TIME. TIME, that bombards them with tortuous hours of wear. Here, as on the battlefronts, Ball Bearings play a mighty part in keeping the "wheels" turning. Without Ball Bearings, TIME would bring our vast war industry to its knees. The Fafnir Bearing Co., New Britain, Conn.

ARMY E NAVY

FAFNIR

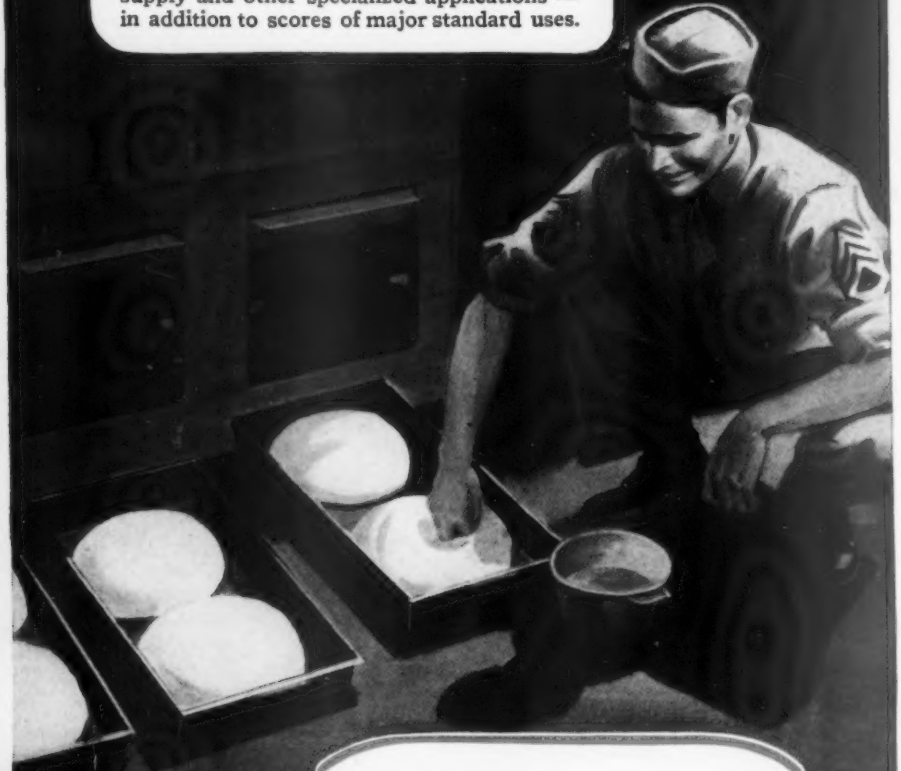
BALL BEARINGS

THE BALANCED LINE - FOR ORDNANCE, AIRCRAFT AND INDUSTRIAL MACHINERY

When writing The Fafnir Bearing Co. please mention Purchasing

AND WE HAD "Real Bread"

"Our boys," in distant lands, get *real bread* — made the American way in "portable" kitchens. Just another way Briggs & Stratton gasoline motors are serving — furnishing power for bread mixers, refrigerators, water supply and other specialized applications — in addition to scores of major standard uses.



We're in full production on Briggs & Stratton 4-cycle, air-cooled gasoline motors — for the war program and approved "essential" civilian uses — but there are not enough "new" motors available to supply the demand. As a special service, we are trying to place "used" Briggs & Stratton motors that may not now be in active service, in the hands of those who need them so badly.

If you have, or know of any Briggs & Stratton motors not now in regular use—please write us, stating model numbers and general condition. It makes no difference how old they are. We will assist in making contacts between owners and prospective purchasers.

BRIGGS & STRATTON CORP.
MILWAUKEE, WIS., U.S.A.

4 CYCLE
BRIGGS & STRATTON
GASOLINE MOTORS

FOR VICTORY
Invest in
WAR BONDS

(Continued from page 138)

no visual attention to operate as there are no dials or indicators involved. Designed primarily for applying the proper torque load to tubing "B" nuts in aircraft plumbing, it is said to eliminate danger of pinching off or weakening flares.

FLEXIBLE BUS-DROP CABLE

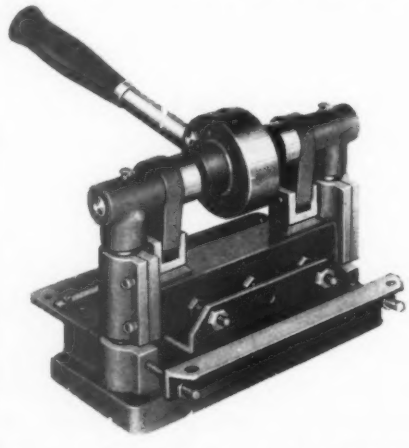
New loom bus-drop cable which carries power from bus bar to individual motor driven-machines in war production plants, is announced by the Wire & Cable Section of General Electric's Appliance & Mechandise Dep't., Bridgeport, Conn. Can be used in new or conversion wiring or as a maintenance item, hooked up easily and quickly in LVD or bus-duct systems; designed for long life under severe conditions such as vibration and rough usage.

PORTABLE ELECTRIC DIPPING TANK

Fast, economical cleaning and degreasing of metal parts and products is claimed for Dipmaster, Jr., a portable, insulated, electrically heated dipping tank, made by Aeroil Burner, Inc., West New York, N. J. Holds 12 gallons of solution; heating element submerged on bottom of tank. May be plugged in on 110 or 220 volt A.C. or D.C. Standard equipment includes two dipping baskets, bi-metal type thermometer, and thermostatic control. Fitted with two swivel type and two rigid casters. Kerosene or gas heated stationary models up to 600 gallons capacity available.

DIE-LESS DUPLICATING

The Di-Acro system of metal duplicating without dies, is claimed to be a dependable means for the duplicating and forming of parts or pieces to die accuracy without time delay or expense of dies and die sets. The precision units used in the method, of which the Di-Acro



shear is illustrated above, are used individually and in co-operation with each other, as die substitutes. Accuracy of Shear No. 2, for example, is guaranteed

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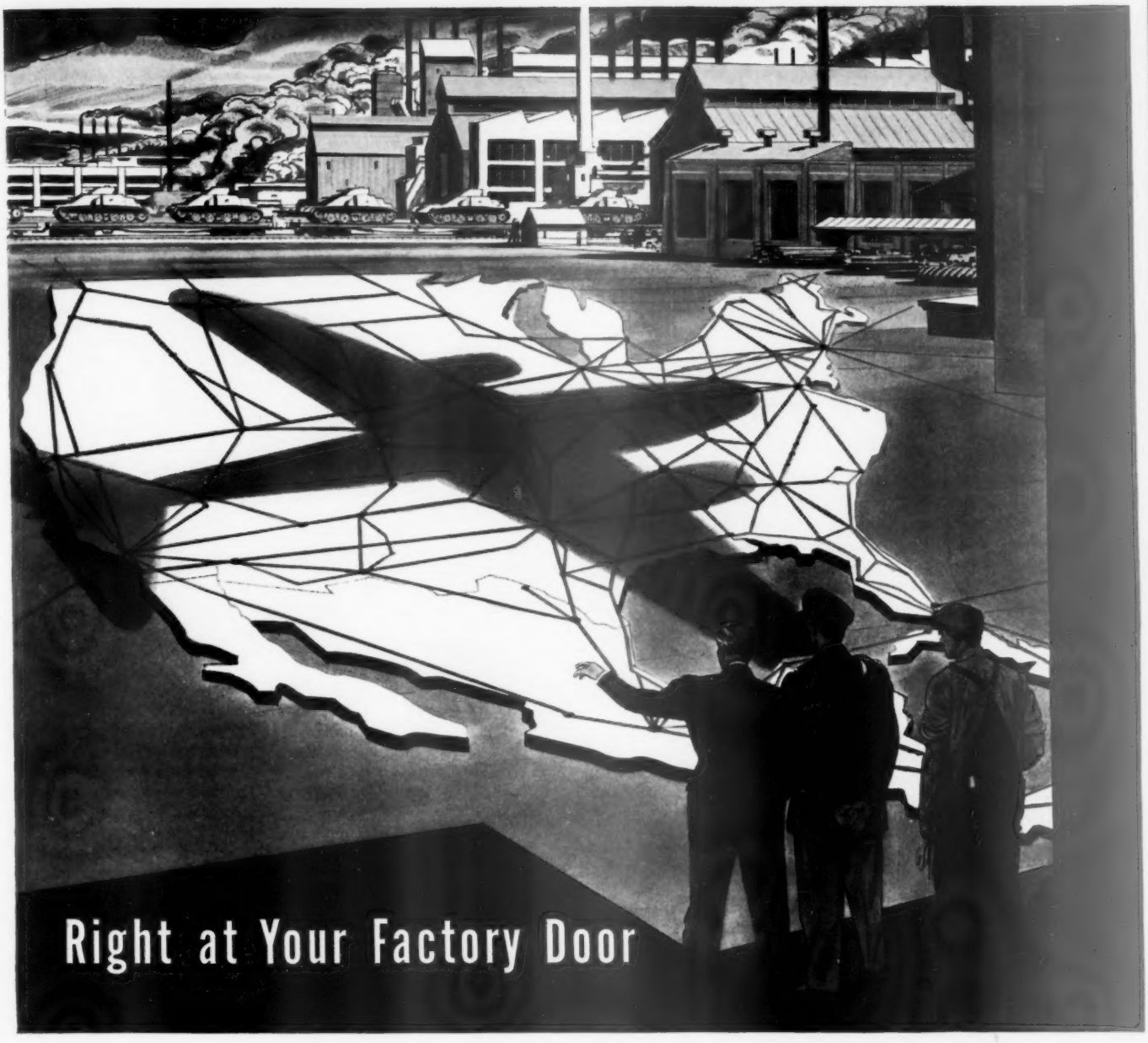


WHEN the Japs struck at Pearl Harbor, the Air Express system of the United States was by far the greatest in the world.

Built during years of peace, it required no conversion for war. It was *ready to go!*

Now, as then, Air Express provides industry with a vast network of skyways over which to move critical material at a speed of three miles a minute.

For the manufacturer, it's almost like having the entire nation right at his factory door—no supplier or sub-contractor can be far away with this fastest form of delivery.

It serves every U. S. industrial town and city, and more than 60 foreign countries —either direct or by rapid Air-Rail connections, with schedules that are figured in hours instead of days and weeks.

It gains millions of work-hours for thousands of war plants, with vital shipments that prevent production tie-ups, break industrial bottlenecks and keep men on the job.

TODAY, Air Express also works hand in hand with the Army and Navy Air Transport services, to supply our fighting fronts throughout the world.

TOMORROW, Air Express will girdle the globe in friendly commerce, and will bring *all* foreign markets to the doorstep of American business.

AIR EXPRESS SPEEDS WAR PRODUCTION

SHIP EARLY — as soon as shipment is ready — to assure *fastest* delivery. PACK COMPACTLY — to conserve valuable space. ASK for our "War-time Wall Chart"—an illustrated guide for simplified preparation of Air Express shipments.

AIR EXPRESS

Gets there FIRST

Phone RAILWAY EXPRESS AGENCY, AIR EXPRESS DIVISION • Representing the AIRLINES of the United States

When writing Railway Express Agency please mention Purchasing

TOP EFFICIENCY with RLM Non-Metallic Reflectors!

Typical Wheeler convenience! Quick, easy access to operating parts by loosening two thumb-screws. Exclusive chain hangers support detached reflector. No loose screws, bolts or nuts to handle.

New "War-Aid" Fixtures insure availability of Wheeler SKILLED LIGHTING for war plants!

In spite of wartime metal scarcity, you can obtain fluorescent lighting fixtures with all the lighting efficiency and convenience of pre-war Wheeler "Skilled Lighting" units. Wheeler's 60 years' experience in better lighting has now produced top-standard "War-Aid" models requiring minimum metal!

Reflectors of "War-Aid" units are rugged non-metallic material. Non-flammable, moisture-resistant. Reflecting surfaces of chip-proof, washable baked enamel provide minimum efficiency of 80% in 48" 2-lamp units; 73% in 3-lamp units; and 73% in 60" 2-lamp units. Available for individual or continuous-run installations.

Write for full details of Wheeler "War-Aid" Fixtures and catalog of Incandescent Fixtures. **Wheeler Reflector Company, 275 Congress Street, Boston, Massachusetts.** New York . . Cleveland. Representatives in principal cities.

Distributed Exclusively Through Electrical Wholesalers

Wheeler REFLECTOR COMPANY

Lighting Equipment Specialists Since 1881

(Continued from page 140)

to tolerance of .001". This unit is suitable for precision work on light and medium weight metals and materials that cannot otherwise be rapidly worked to accurate tolerances with hand operated "scissors" shear or with heavy foot-operated floor-type shear. The shear can be quickly arranged for shearing, squaring, slitting, stripping or notching, in ductile and pliable metals and materials, including spring tempered metals, fabrics, plastics, leathers, rubber, and the very lightest of tissues. Other units are the Di-Acro brake, and the Di-Acro bender. Shears and brakes each come in three models, bender in two. Book of 32-pages giving full details is available from the producers, the O'Neil-Irwin Manufacturing Co., 300 8th Ave. South, Minneapolis, Minn.

NEW COOLANT PUMPS

Two compact, portable coolant pumps are announced by Atlas Press Co., Kalamazoo, Mich. Easily adaptable to almost any machine tool, the units are designed to meet peak production demands, reduce tool wear and improve work finishes. Pumping capacities are said to meet maximum flow requirements of most makes of lathes, drill presses, millers, grinders, single and multiple spindle drilling and tapping machines, etc. Centrifugal design is said to increase rigidity, and insure smooth troublefree performance. No priming is necessary.

PREVENTS STATIC ELECTRICITY

Flooring material, a ready mixed mastic developed by the Rock-Tred Corporation, Chicago, is claimed to be effective preventive of explosions due to static electricity in industrial plants. Product is named Condurock, and the safety factor is said to lie in its safety conductive quality. It is claimed to be spark-proof as well as explosion safe. Can be applied over floor surfaces, has dark red color, stands repeated washings, and will carry heavy loads.

TECHIDE FLAT WALL PAINT

Techide is name of new flat wall paint made from synthetic resins, oils and pigments, announced by Pittsburgh Plate Glass Co., Grant Building, Pittsburgh, Pa. Can be applied with calcimine brush on variety of surfaces. It is quick drying. Comes in variety of colors—ivory, silvery gray, sunny yellow, dusky rose, light buff, mist blue, sun tan, cool green and white.

A Handful of Power!

Black & Decker Holgun—

--most widely used Electric Tool in War Industry

THE Black & Decker Holgun drills thousands of holes in metal sheets, castings and forgings—in wood, plastics and other materials used in building and equipping America's fighting weapons. Light, compact, with "Pistol Grip and Trigger Switch," the ¼" Holgun Drill is designed for work in close quarters—stands the "gaff" of extreme operating conditions. The Holgun is available in spindle speeds for all types of production drilling—from high torque at 500 rpm to high speed at 5000 rpm.

Companion tools to the Holgun are the Tapgun (for cutting threads at top speed with minimum tap breakage) and the Scrugun (for making short work of screw driving and nut running operations). Such jobs as these—drilling and tapping, screw driving and nut running, grinding and sanding, sawing and sheet metal cutting — are among the countless jobs on which Black & Decker Portable Electric Tools are saving vital hours in war production now.

Lessons in Ingenuity

FREE This illustrated booklet shows how ingenious war producers have combined brains with Black & Decker Tools —when special equipment could not be had to keep vital production rolling. It's called, "They Used Their Heads," and a copy is yours for the asking. It's chock-full of information and ideas. Write: The Black & Decker Mfg. Co., 764 Penna. Ave., Towson, Md.

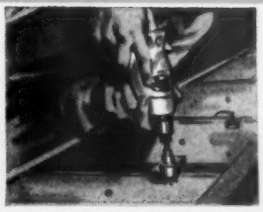
LEADING DISTRIBUTORS EVERYWHERE SELL

Black & Decker

PORTABLE ELECTRIC TOOLS

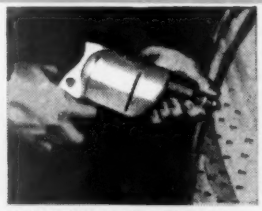
Get in the Scrap with Your Scrap Now!

WINGS FOR VICTORY. Husky B & D Holguns speed drilling operations on airplane wing parts. There are more Holguns used in the aviation industry than any other electric drill.



BOAT FRAMES ARE NOTCHED quicker with this ¼" Holgun, specially equipped with a multi-spur. These versatile tools help solve many new wartime production problems.

TAPPING GOES ⅓ FASTER with Black & Decker Tapgun than by former method, reports plant operator. The Tapgun saves time, labor—keeps running on hard schedules.



THOUSANDS OF SCREWS on thousands of boats are driven faster and more accurately when B & D Scruguns go to work. The Scrugun is widely used in small boat production.

"ELECTRIC MOTOR production speeded up with Black & Decker Scruguns," says motor manufacturer. On all multiple screw driving or nut running operations, Scruguns save time.

When writing The Black & Decker Mfg. Co. please mention Purchasing

Among the ASSOCIATIONS

How "Frozen Steel" is Put to Use

Chicago Purchasing Agents Learn How Idle Steel is Located, How it is Handled and Put to Work

"Frozen steel" produced for automobiles, household equipment and other items before their manufacture was restricted or stopped is being located and put to war uses as the rate of more than 70,000 tons monthly, according to A. Oram Fulton, Assistant to the Director of the WPB's Steel Division, Washington, in an address to members of the Purchasing Agents Association of Chicago at the Hotel Sherman.

"The shift from peace operations to war work has resulted in a large accumulation of excess steel," said Mr. Fulton. "It includes many varieties badly needed in war production, including stainless and alloy steels, carbon steel in structural shapes, bars, plates, sheet and strip, tubing, wire, castings and forgings; high alloy castings, tool steel, tinplate and other types. This tremendous stockpile of unused steel is estimated by some to run into millions of tons."

Last Spring the WPB took steps to get the idle steel into war production. Steel Recovery Corporation was formed in May, 1942, with an allotment of 400 million dollars from Metals Reserve Corporation, an RFC subsidiary, to find the steel and its logical users and bring them together in the quickest possible time.

300,000 INQUIRIES SENT OUT

In October, over 300,000 inquiry forms were sent to possible holders of steel, requesting information on any idle stocks possessed by them. When the replies came in and the information was analyzed, another questionnaire, over 100,000 of them, was sent to those concerns which stated they had steel available. This second form elicited detailed information on what was held. The facts are now being tabulated in the Office of the Steel Recovery at Pittsburgh and each day the organization isues a detailed catalog of available steel which is sent to prospective purchasers. Other catalog listing the steel and its holders in given regions also are issued and mailed to each territory.

It is expected the volume of steel being moved will reach its peak in May, continue on that level for several months, then gradually decline as supplies are exhausted. It is estimated that steel will be forthcoming from over 100,000 inventories, covering 17 varieties and aggregating perhaps 2 million items.

The WPB official explained that the idle steel is divided into two classes: "as-is" and "remelt".

"As-is steel can be used in its present condition or after some re-rolling or re-processing," said Mr. Fulton. "On the other hand, there is quite a volume of steel, partially or wholly fabricated, whose only possible use in the war effort is to be returned to the steel mills for remelting."

Where steel can be used in its present form, the Steel Recovery Corporation merely puts buyer in touch with seller and negotiations are conducted by them under present price ceilings. Where re-rolling or re-processing is necessary, the Government buys the steel at what is known as "limited cost" and turns the metal over to the new purchaser at the market price, absorbing any loss.

When remelting is the only solution, SRC pays what Mr. Fulton called the "Government price," which runs from 15% to 30% below "limited cost". The corporation then sells the metal to a steel mill at the regular scrap price, absorbing the loss. In such cases, holders of the excess steel receive up to four to six times the price they would have derived, if they themselves had sold the metal as scrap.

Mr. Fulton stated that in the great majority of transactions to date, the Government has not had to assume any loss. The W. P. B. determines whether the purchaser will put the metal to adequate use in the war program. Most of the steel is purchased under priority ratings of AA-5 or higher.

D. C. BUYERS MEET

The March meeting of the Purchasing Agents Association of Washington, D. C., was held at the University Club on the 9th. Speakers were Stuart F. Heinritz, Editor of PURCHASING, who discussed "What This War Is Doing to Purchasing," and F. Albert Hayes, Past President of the N.A.P.A., who gave a broad view of Association activities based on his observations while visiting more than forty of the local groups in all parts of the country. The open forum discussion, led by President Scully, was on the subject of termination clauses in war contracts.

ADVERTISERS' NIGHT AT PHILADELPHIA

The annual "Advertisers' Night" meeting of the Philadelphia Purchasing Agents Association was held at the Bellevue-Stratford Hotel, March 11th. The usual industrial exhibit was omitted this year, in view of war conditions, but the event lost nothing of the enthusiasm and significance which have characterized previous meetings. More than 600 members and guests were present, including representatives of all Associations in District No. 8. Speaker of the evening was Col. Carlos Romulo, author of "I Saw the Fall of the Philippines," who gave a vivid word picture of the Bataan campaign and the last days of Corregidor.

PITTSBURGH NOMINATING COMMITTEE SUBMITS CANDIDATE LIST

The nominating committee of the Purchasing Agents Association of Pittsburgh, R. W. Mackensen, chairman, filed the following list of consenting candidates for offices to be filled at the forthcoming election:

President—R. O. Keefer, Aluminum Company of America., Pittsburgh, Pa.

Vice President—J. H. Phillips, Pittsburgh Steel Co., Pittsburgh, Pa.

Treasurer—E. C. Buerkle, National Bearing Metals Corp., Pittsburgh, Pa.

Secretary—C. H. Rindfuss, Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.

National Director—P. B. Zoeller, Elliott Company, Jeannette, Pa.

Directors (five to be elected):

L. H. Bittner, Allegheny Ludlum Steel Corp., Brackenridge, Pa.

A. J. Bodenham, Fort Pitt Bridge Works, Canonsburg, Pa.

Frank H. Glaser, Hubbard & Company, Pittsburgh, Pa.

T. E. Halbrook, St. Joseph Lead Company, Monaca, Pa.

A. E. Hurrell, Duff-Norton Manufacturing Co., Pittsburgh, Pa.

H. C. Jones, Cooper-Bessemer Corporation, Grove City, Pa.

J. M. Knowles, Consolidation Coal Company, Fairmont, W. Va.

Harry L. Oberlin, Scaife Company, Oakmont, Pennsylvania.

G. Walter Sanborn, United Engineering & Foundry Co., Pittsburgh, Pa.

D. E. Winslow, West Pen Power Company, Pittsburgh, Pa.

Serving with Mr. Mackensen on the nominating Committee were J. B. Connally and Walter Brubach.

NORTHERN CALIFORNIA PROGRAMS

Three students from the Castlemont High School, with their principal, gave the East Bay Group of the Purchasing Agents of California, timely and interesting talks on "After the War—What?", and one of the boys entertained with several selections on the accordion, at the March 2 luncheon meeting. Other March meetings included a talk by W. L. Nelson, manager, technical sales, Great Western Division, The Dow Chemical Com-

(Continued on page 146)

THE MORE MODERN THE WAR . . . . THE GREATER THE NEED FOR WOOD SHOVELS

WORLD WAR I

Of the 1,800,000 Entrenching Shovels bought by U. S. Army . . . 1,250,000 were made by WOOD.

WORLD WAR II

Entrenching Shovels are an essential tool of mechanical war . . . standard equipment for troops, tanks, trucks, armored cars, and other motorized units.

WOOD SPECIALIZATION WINS FOR AMERICA!

The WOOD SHOVEL AND TOOL COMPANY has specialized, not only in the making of SHOVELS, SPADES, and SCOOPS, but also in material and manufacturing specifications which make these essential tools last longer.

WOOD SPECIALIZATION HELPS AMERICA NOW. Large quantities of shovels are being supplied when needed. Once on the job, WOOD shovels, spades, and scoops last and last—thereby saving metal vitally needed for other important uses.

THESE SIX FAMOUS WOOD BRANDS ARE KNOWN THE WORLD OVER!

The Steel I-Beam Handle Reinforcement.

An extra-strength, extra-wear feature . . . found only in WOOD Closed-Back and Open-Back Shovels, Spades and Scoops.

THE WOOD SHOVEL AND TOOL CO., PIQUA, OHIO

A NATIONAL ORGANIZATION SPECIALIZING EXCLUSIVELY IN SHOVELS, SPADES, AND SCOOPS

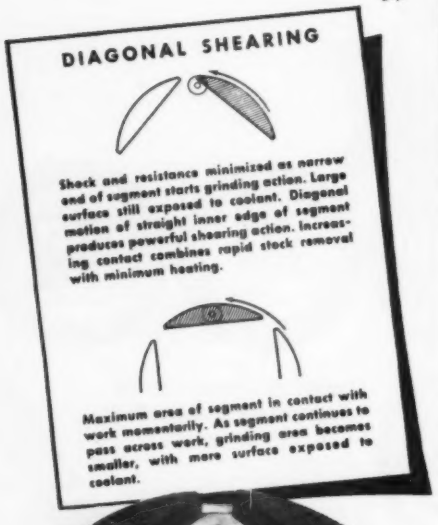
Grinding surfaces within 2 MICROINCH Surface Finish

is an *accomplished fact* with Cortland Chucks and Segments operating on standard vertical grinding machines. Numerous Production Test Runs prove that Cortland equipment is improving and speeding grinding output wherever a Segmental Chuck can be used. Informative bulletin sent on request—inquiries handled promptly. See Cortland for grinding wheels of all types.

CORTLAND GRINDING WHEELS CORP.

Chester, Massachusetts

3-P


DIAGONAL SHEARING
Shock and resistance minimized as narrow end of segment starts grinding action. Large surface still exposed to coolant. Diagonal motion of straight inner edge of segment produces powerful shearing action. Increasing contact combines rapid stock removal with minimum heating.
Maximum area of segment in contact with work momentarily. As segment continues to pass across work, grinding area becomes smaller, with more surface exposed to coolant.

CORTLAND

Segmental Chucks

(Continued from page 144)

pany, on "Recent Developments in Plastics", and priorities and CMP discussions.

The San Francisco group listened to Charles W. Williams, District Food Rationing Representative, San Francisco District Office, O. P. A., spoke on "Point Rationing", and on March 4th, held its First Annual Dinner Dance for members and their ladies in the Room of the Dons, Hotel Mark Hopkins, San Francisco. At the March 11 meeting, the group was entertained with a showing of what goes on in California's agricultural and industrial circles by a motion picture in color, "California With Her Sleeves Rolled Up", presented by the Pacific Gas and Electric Company. This was followed at a later meeting by a talk by James Mussatti, general manager, California State Chamber of Commerce on "The Industrial Development of California—Present and Future". The March 25 meeting was devoted to a discussion on priorities under the leadership of W. C. Haack, chairman of the Forum Committee, and H. L. Weber, chairman, Priorities Committee.

HOLD OLD-TIMERS' NIGHT AT BRIDGEPORT

"What Will Happen to Business After The War Is Over" was the topic of a discussion by E. Payson Blanchard, sales manager of the Bullard Company, as the principal speaker at an old-timers' night held by the Salesmens and Purchasing Agents Association, the evening of March 1st at the Stratfield hotel, Bridgeport, Conn. Ross T. Phipps was general chairman of the affair. Thomas Russell of the Westinghouse Company, newly elected president, presided over the meeting at which a number of charter members were honored.

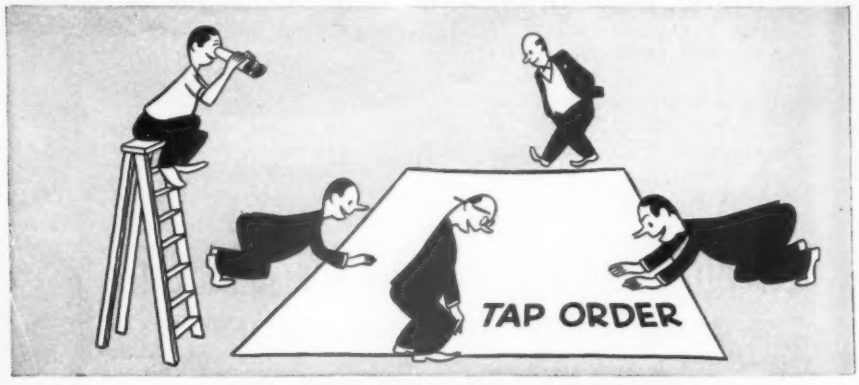
TULSA SEES STEEL-PRODUCTION SOUND-MOVIE

The Bethlehem Supply Company presented the sound-motion picture "Steel for the Armed Forces" at the March 9th meeting of the Purchasing Agents Association of Tulsa. The films were prepared and produced for the parent company, the Bethlehem Steel Corporation. The showing of the picture was preceded by a session on priorities at five o'clock, and dinner. The March 23rd meeting was an open forum on priorities and related matters for buyers and sellers, under the auspices of the Priorities Committee headed by W. H. Barclay.

OHIO SPRINGFIELD ASSN. MAKES SPECIAL RED CROSS CONTRIBUTION

The Springfield (Ohio) Branch of the National Association of Purchasing Agents, enjoyed a complimentary dinner as guests of Mr. Metz of the Springfield Manufacturing Co., Wednesday evening, March 10. The speaker of the evening was Judge Harry Gram of the Probate Court who discussed in detail the work of the Red Cross and the Blood Bank Program. From members present and the

(Continued on page 148)



NO SCRAP OF PAPER!

Your order for taps gets PERSONAL ATTENTION from Threadwell and its distributors. If it can't be filled at once, every effort is made to expedite it. They try and try to get you the taps you want WHEN you want them. And often they produce the goods, as excerpts from customers' letters give proof.

THREADWELL TAP AND DIE CO., GREENFIELD, MASS., U.S.A.

EXPORT STOCKING DISTRIBUTORS
CANADA: Bridge Machinery Co., Montreal
ENGLAND: Skylux Ltd., London

Threadwell
"TAPS OF DISTINCTION"

Step-Up Cutting Speeds – *Save Oxygen*

with the Airco "45"

High Speed Machine Gas Cutting Tip

You can increase metal-cutting speeds 20% to 30% with the Airco "45" High Speed machine gas cutting tip. More than a year of actual performance has convincingly proved that the Airco "45" not only cuts metal faster, but it also makes important savings in oxygen consumption.

The faster cutting speeds realized with the Airco "45" result from its divergent nozzle design and the use of higher operating pressures. This combination produces a cutting stream of oxygen that is practically free from exit turbulence. As a result the width of the cut (or kerf) is considerably narrower – the metal burned away by the oxygen is less – than when conventional machine cutting tips are used.

The Airco "45" High Speed Tip is available in sizes to cut metal thicknesses up to 8". For complete information get in touch with your nearest Air Reduction office.

Free copies of this poster available on request.

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General Offices:
60 EAST 42nd STREET, NEW YORK, N. Y.
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MAGNOLIA-AIRCO GAS PRODUCTS CO.

AIRCO WILSON

IDLE CYLINDERS ARE PRODUCTION SLACKERS: *Keep 'em rolling for victory!*

When writing Air Reduction please mention Purchasing

Continued from Page 146

association, a check for $47. was sent to the Red Cross to help carry on. The entertainment of the evening was a film presented by the Texaco Company, followed by a discussion of the forthcoming national convention to be held in New York. President Saum presided at the meeting.

HEAR DETAILS OF CARRIER SINKINGS AT SEATTLE

A feature of the March 11 meeting of the Purchasing Agents' Association of Washington, at the New Washington Hotel, Seattle, was the recounting of the sinking of an American aircraft carrier by an officer of the U. S. Navy. Other talks on the evening's program included "A History of Pipe" by C. S. Gillespie of the Western Gear Works; "Expediting from the Purchasing Agent's Viewpoint", by Watt Fallis of the Kenworth Motor Truck Corp., and a review of late releases from the N. A. P. A. by Stanley F. Cowdell of the Grinnell Company of the Pacific.

TWIN CITY PURCHASING AGENTS SEE BOMBING PICTURES

"Target for Tonight," a very interesting and exciting motion picture account of an actual raid by the Bomber Command of the Royal Air Force, was witnessed by members of the Twin City Association of Purchasing Agents at their March 10 meeting. The meeting was also addressed by E. B. Pierce, Executive secretary of the Alumnae Association of the University of Minnesota on "Historical Sketches." The meeting was held in the St. Paul Athletic Club.

N. W. PENNSYLVANIA ASSOCIATION HEARS TALK ON MINERALS

Norman I. Stotz, Metallurgical Engineer for the Universal Cyclops Steel Company, Titusville, Pa., gave a talk on minerals imported from South America, at the March 4 meeting of the Purchasing Agents Association of Northwestern Pennsylvania, presenting an interesting study of the importance of bauxite, mica, quartz crystals, industrial diamonds, etc. in the war effort. Several reels of film on various manufacturing processes of the Struthers Wells Company of Warren, Pa., were shown, the showing fitting nicely into a forty-minute blackout. Three new members were elected at the meeting, which was held in the Carver Hotel, Warren. The new members are Walter W. Windahl of the Corry-Jamestown Mfg. Corp., Corry, Pa.; Ernest Hagenlocher of the Thomas Flexible Coupling Co., Warren, Pa., and Edgar L. Thompson of the Ottis Eastern Service, Inc., Bradford, Pa. President C. L. Holden was in charge of the meeting.

DIVERSIFIED PROGRAM AT NEW ENGLAND MEETING

In addition to the Controlled Materials Plan which was discussed at the afternoon meeting of the New England Purchasing Agents Association March 8, the subject of synthetic rubber was interestingly presented at the evening meeting by Robert L. Lybeck, automotive and aeronautical sales manager of the Colonial Beacon Oil Company. The program was rounded out with short reports by Dr. H. F. Arendtz, United Business Service, Herbert Downward, Babson's Statistical Organization, and Herbert N. McGill of the McGill Commodity Service, Inc., on economic subjects.

HABERKORN SPEAKS AT CHICAGO

President Roy C. Haberkern of the National Association of Purchasing Agents, and Purchasing Agent and Director of the R. J. Reynolds Tobacco Co., Winston-Salem, N. C., was guest speaker at the March 18 meeting of the Purchasing Agents Association of Chicago. The usual second Thursday of the month meeting date was changed to the third Thursday to take advantage of his presence in Chicago on his country-wide tour visiting member groups of the National Association, inspecting war plants, and gathering first hand information on trends. A sound film, "American Can Give It", a General Motors Electro-Motive Corporation production was also shown.

Two new group chairmen were announced by the Chicago Association.

Continued on Page 150

Don't Let "Thin-Skinned" *Tracing Cloths* Slow Down Your Output!

"Thin-skinned" tracing cloths? They're the kind that won't take erasures without wearing through or smudging. How can draftsmen steer clear of them? By using Arkwright Tracing Cloths! Arkwright Tracing Cloths are "thick-skinned" – the base fabric is closely woven and the finish is extra tough. That's why Arkwright Cloths stand up to corrections and erasures so well . . . why they're preferred by so many warplant draftsmen. Arkwright Finishing Company, Providence, Rhode Island.

Arkwright TRACING CLOTHS

AMERICA'S STANDARD FOR OVER 20 YEARS

When writing Arkwright Finishing Company please mention Purchasing

Like Bombs on the Axis-

GOVERNMENT SPECIFICATION FINISHES by PERMITE

Help Speed Victory!

Quick Drying Camouflage Enamel

Quick Drying Metal Primer

Ammunition Lacquer Enamel

Spar Water Resisting Varnish

Aluminum Mixing Varnish

General Purpose Lacquer Enamels

Dope, Cellulose Acetate, Clear

Paints for Ammunition

Paint, Cavity—for Torpedoes

THE long experience of Permite chemists in developing exclusive varnishes and vehicles for Permite Ready-Mixed Aluminum Paints, and the complete facilities of the modern Permite paint plant enable us to supply prime contractors or sub-contractors with government specification finishes for practically all types of equipment or ammunition finishes.

Clear and colored lacquers, zinc chromate primers, enamels, mixing varnishes, camouflage paints, rust inhibitors — custom-built to Government Specifications — are included in the Permite Line. We also supply Permite Aluminum Paints on WPB allocation.

Quotations on your finishing needs submitted promptly upon request.

ALUMINUM INDUSTRIES, Inc.

CINCINNATI, OHIO

PERMITE *Industrial* FINISHES

When writing Aluminum Industries, Inc. please mention Purchasing

(Continued from page 148)

namely, J. B. Malleck of the Samuel Harris & Co., who heads the Electrical Jobbers and Mill Suppliers Group; and Roy O. Carlson of the Automatic Spring Coiling Co., who heads the Manufacturing Jobbers Group.

GOODALE HEADS CALIFORNIA GOVERNMENTAL P. A. ASSN.

The following slate was elected at the 26th annual convention of the California State, County and Municipal Purchasing Agents' Association, held in San Francisco: President: Grant Goodale, State of California, Los Angeles; first vice president, Harry L. Davisson, City of Berkeley; second vice president, Eugene Fenelon, Orange County; secretary-treasurer, Verne Gehringer, San Diego County. Long Beach was named as the conference city for 1944.

FAREWELL PARTY FOR FRANK ROBB AT SPRINGFIELD

The Purchasing Agents of Western Massachusetts combined a farewell party to Frank Robb, with their monthly dinner meeting in the Hotel Sheraton, Springfield, Mass., on March 10. Mr. Robb who has been manager and Purchasing Agent at the Westinghouse Electric & Repair plant, has been promoted to the managership of the Los Angeles branch. He was presented with a traveling bag by President A. R. Sanger. Bennett Pringle of Bridgeport will succeed him at Springfield. The meeting was featured by an after dinner talk by John Pond, business manger of Springfield College, on his travels in Japan in 1937.

TALK ON LABOR SITUATION AT BUFFALO

Dr. Martin Brumbaugh, professor of economics at the University of Buffalo was guest speaker at the March 10 meeting of the Purchasing Agents Association of Buffalo. His subject was Some Underlying Factors in the Labor Situation.

DISCUSS WPB ACTIVITIES AT PITTSBURGH

"At Your Service" was the subject of an address before the March 16 meeting of the Purchasing Agents Association of Pittsburgh at the Hotel William Penn by A. H. Burchfield, Jr. of the Pittsburgh office of the WPB, on the local activities of his office and expanded services under the WPB decentralization program.

LAYER HEADS HOUSTON ASSOCIATION

D. M. Layer, Purchasing Agent, Dunlay-Armand Company, Houston, Tex., was elected president of the Purchasing Agents Association of Houston. Other officers elected include: Charles W. Dayney, Jr., first vice president; Earl Cobden, second vice president; S. L. Dodson, secretary; W. J. Peddie, treasurer; Ivan Nevill, national director; A. J. Williams, alternate national director, and W. A. Raymond, R. H. Armstrong and C. S. Roger, local directors. The new officers were officially installed at the annual banquet and inaugural ball held at River Oaks Country Club.

F.B.I. MAN AT PROVIDENCE

Dean R. Morley, special agent in charge of the Providence office of the Federal Bureau of Investigation was the principal speaker at the March 22nd meeting of the Rhode Island Purchasing Agents' Association. The commodity meeting was lead by James Q. Dolan, head of the Priorities Division of the Provision office of the War Production Board.

ADDRESSES CHICAGO PAPER GROUP

Irving J. Stoller, packing engineer, Bradner, Smith & Co., was the speaker at a luncheon meeting of the paper group of the Purchasing Agents Association of Chicago, in the Hotel Sherman, March 11th.

CMP AT BIRMINGHAM

Members of the Purchasing Agents Association of Birmingham listened to an address by Henry Cragg of the War Production Board on the Controlled Material Plan at their March 4 meeting, which was

(Continued on page 154)

Prompt Deliveries ON CASTINGS —LARGE AND SMALL . . . .

● *A large drill press arm cast for a prominent machinery manufacturer.*

● *A small pressure casting designed for a gas engine.*

LEADING manufacturers in many different fields of industry have used Forest City Castings continuously for years—many as long as 25 years.

Forest City production handles castings from a ½ ounce to a half ton—gray iron, semi-steel and high-test semi-steel. Today we can produce and deliver with unusual promptness. Discuss your requirements with one of our casting specialists. He's as near as your telephone.

Gray Iron, Semi-Steel and High Test Semi-Steel Castings

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THE FOREST CITY FOUNDRIES CO.

2500 WEST 27th ST. • CLEVELAND, OHIO

When writing The Forest City Foundries Co. please mention Purchasing

THEY'RE Faster
AND GO FARTHER
American planes today have what it takes! Speed — wider cruising range — greater firepower — maneuverability! All this — due to the ingenuity of aviation engineers and machine tool builders — working with the right kind of tools. That's where Wesson Carbide Cutting Tools are doing their part — *cutting tougher metals, faster, with greater precision, with minimum rejects.* » » » Pioneers in "tooling up" for aviation motor production, Wesson Company is constantly setting new standards of precision and speed in Carbide Cutting Tools.
The counsel of Wesson engineers — skilled in engineering and designing of cutting tools — is available to help solve present war production problems, or for post war planning.
WESSON CO., DETROIT, MICH. (Ferndale Station)
WESSON
Carbide Cutting Tools
First choice when tough metals are to be cut — for special or standard purposes — for single or multiple setups.

WHEN THE WAR IS OVER we'll enjoy higher standards of living here in America. Automobiles, airplanes, tractors and trucks — household appliances — every machine and tool that's made of metal — will be better, safer, stronger.

Wesson Carbide Cutting Tools will help to make this possible by cutting *tougher* metals, with greater precision. And these things will cost less to buy — they'll operate more efficiently and more economically — they'll be safer and will last longer.

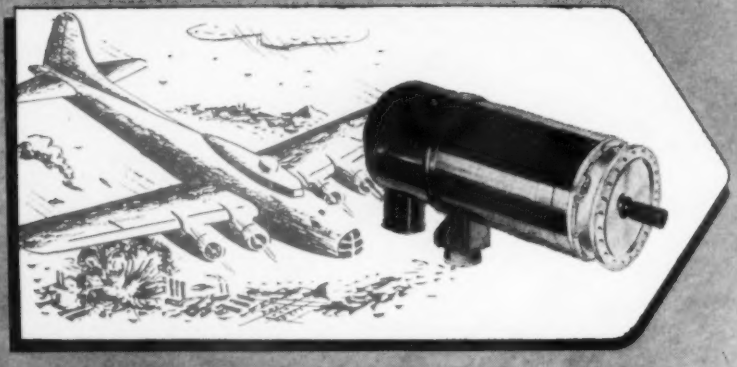
When writing Wesson Tool Company please mention Purchasing

Do You Need

MOTORS FOR NAVAL APPLICATION

In a space of *five weeks*, production of a brand new series of motors was raised 400 motors per week. Scheduled delivery to eight different customers was smoothly established.

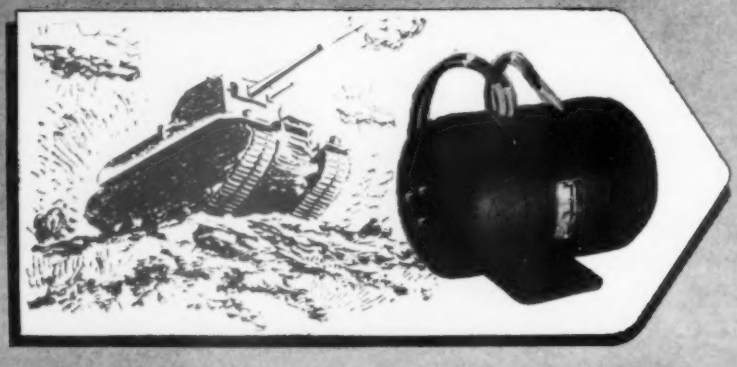
★



A SMALLER, LIGHTER GENERATOR FOR AIRCRAFT

A generator *one-sixth the weight* of comparable industrial types was developed, meeting stringent specifications for high-altitude performance—a typical example of ingenious G-E design.

★



A SPECIAL DYNAMOTOR FOR USE ON TANKS

To power radio equipment in tanks, a special dynamotor with increased capacity was developed. Sample in eight weeks; production in large quantities eight weeks after approval.

Builder of TRI-CLAD Motors ★ AMPLIDYNES AIRCRAFT POWER PACKAGES DYNAMOTORS GENERATORS EVERYTHING IN MOTORS

When writing General Electric Co. please mention Purchasing

FIGHTING MOTORS*?

WE MAY BE ABLE TO HELP YOU

WE invite builders of motor-operated combat equipment to get in touch with us in the earliest stages of planning for their motor requirements. We are building so many new and ingenious fighting motors, it's 10 to 1 that we already have something which can be adapted to meet your needs.

Although we cannot accept any new orders for certain types of fighting motors, we do have, or will have in the very near future, facilities to engineer and build additional fighting motors of other types. We would appreciate the opportunity of reviewing your needs during the earliest stages of your planning, in order to determine how we can help you.

We have the pledge of the more than 1700 design and application engineers in our motor plants to give the fastest service it is humanly possible to give whenever they are asked to help on fighting motors. And even if we must say "No," we believe you will appreciate a fast answer. Get in touch with your local G-E representative to see if the fighting-motor design you need can be adapted to our available production facilities. *General Electric Co., Schenectady, N. Y.*

* **"FIGHTING MOTORS"** is our term for electric motors in equipment used by our fighting forces —motors which contribute to combat efficiency. In contrast to motors used for production, they may be designed, and produced by the thousands, and declared obsolete—all within a few months.

Fighting motors often require amazing ingenuity in their design, always demand the utmost in reliability, and must be produced with a new concept of speed. They are truly *life or death motors.*

GENERAL ELECTRIC

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The Engineer's the Pioneer!

In modern war . . . on both military front and industrial front . . . the pioneer work is done by the engineers. For example, Bond engineers pioneered basic improvements in truck casters that now serve leading war industries.

Bond Casters Fit the War Job!

BOND 40-A SERIES. *Sturdy, all steel construction reduces caster breakage, cracking or excessive wear even under peak loads. Swivels with frictionless ease. Pressure lubricated throughout. Wheel sizes from 4" to 12" dia.; load capacities from 425 to 4500 lbs. per caster.*

BOND engineering is "down to earth"—it pioneers improvements that fit the caster to the job. That's been the Bond policy for over a quarter century and it produces industrial casters that last longer . . . swivel easier . . . and *speed up war production by speeding up handling of war materials.* Write for Bond Catalog K-34—and choose the casters that fit *your* war job.

BOND FOUNDRY & MACHINE COMPANY, MANHEIM, PA.

Bond* TRUCK CASTERS

* Reg. U. S. Pat. Off.

(Continued from page 150)

held in the Redmont Hotel. "Man Power" was the subject of an interesting talk at a previous meeting, by George Bellsnyder of the Goodall-Brown Dry Goods Company of Birmingham. CMP was also discussed at this meeting, the discussion being led by Harlan Cross.

MILWAUKEE CELEBRATES 25TH ANNIVERSARY

March 10 was a red-letter day for the Milwaukee Association of Purchasing Agents, for it marked the 25th anniversary of the association, and some 300 purchasing agents and their bosses enjoyed an excellent dinner, entertainment and a stirring address by Executive Secretary George A. Renard of the National Association, at the Hotel Pfister. Mr. Renard held his audience spellbound for over an hour with a forceful talk on "Shaping our Business Course to Fit the War and the Future."

Mr. Renard expressed the opinion that the European phase of the war would be over within a year. He said that it appears that the fighting in Europe and that in the Pacific will not end at the same time, a condition that would permit the government to taper off on war production and gradually return men from military to civilian life. He declared that major war construction has been completed and that machine tool production has passed its peak, and that any businessman is "crazy" if he expands his plant or buys a new machine when subcontracting facilities exist. In the matter of "a galaxy of new products" immediately after the war, he expressed the thought that though many new materials and techniques had been developed, industry was more concerned with getting back to normal production the quickest way possible, and that the impact of new ideas and new product developments would not be felt until later.

CMP INTRIGUES DALLAS

The Purchasing Agents Association of Dallas, Texas is holding bi-monthly clinics on priorities and regulations. Among the speakers at these meetings have been Warren G. Brown, Chief of the Priority Section, Eighth Region, W.P.B., who was assisted by Wayne Bovee of the Redistribution Materials Branch, and Caldwell Scruggs, associate analyst, WPB; also, Charles L. Henry, Regional Representative, CMP, and Henry Russell, analyst.

REMINGTON-RAND EXECUTIVE ADDRESSED ROCHESTER GROUP

W. F. Block, Manager-Production and Stock Control Record Division, Remington-Rand, Inc., gave the members of the Purchasing Agents Association of Rochester, a timely and educational lesson on the Controlled Materials Plan, the "hows" and "whys" of coordination be-

(Continued on page 157)

For connecting up the tubing on lines that MUST stay tight

THE rapid increase in requirements for war equipment and production machinery has created many new applications of tubing for fuel, oil, lubrication, air, vacuum and other lines. To meet this demand it is necessary for both designers and production men to know more about tubing connection practice.

Although it would seem to be quite a simple engineering problem, it has taken both research and engineering nearly 50 years to bring tubing connection practice up to its present day standard. The Imperial Organization has contributed much to the advancement of tubing connection work through the development of new and better types of fittings and in the improvement of tubing application work.

In many cases Imperial engineers spend much time with manufacturers of products helping to work out tubing layouts that will make it possible to use the right type and fewest number of fittings. Thus the danger of tubing failures due to faulty connections is eliminated and often the costs are reduced.

If you have problems that involve the use of tubing connections on essential war equipment or on production machines that are turning out war products, we should be pleased to render every possible assistance.

THE IMPERIAL BRASS MFG. CO., 512 S. Racine Avenue, Chicago, Illinois

IMPERIAL

COMPRESSION, S.A.E. FLARED, INVERTED FLARE, HI-DUTY AND FLEX FITTINGS AND COUPLINGS FOR STEEL, COPPER, BRASS, ALUMINUM AND NEOPRENE TUBING • SHUT-OFF COCKS • TUBE CUTTERS, BENDERS, REAMERS, AND FLARING TOOLS

When writing The Imperial Brass Mfg. Co. please mention Purchasing

WeldELLS have everything ★

Every WeldELL can pass this test!

YES, every WeldELL* can pass this test for true circularity—or any other test for dimensional accuracy. A number of steps in their production contribute to this uniform accuracy, and as a final precaution every fitting is given a special truing operation to bring it to exact size before machining bevels and lands.

Why do we go to all this extra trouble just to provide a little greater dimensional accuracy in a rugged thing like a welding fitting? The man who uses WeldELLS knows the answer to that question. He has found that the extra lengths to which we go to achieve greater accuracy pays dividends in time saved on the job—results in better and faster welding.

Check down the list of WeldELL features and you will find that WeldELLS and other Taylor Forge Welding Fittings give you the means of doing every job as *well* as it can be done—as *easily* as it can be done—as *economically* as it can be done.

TAYLOR FORGE & PIPE WORKS
General Offices and Works: Chicago, P.O. Box 485
New York Offices 50 Church Street
Philadelphia Office: Broad Street Station Building

★ No other fittings for pipe welding combine the features found in WeldELLS. In addition to extreme dimensional accuracy these features include:

- **Seamless**—greater strength and uniformity.
- **Tangents**—keep weld away from zone of highest stress—simplify lining up.
- **Precision quarter-marked ends**—simplify layout and help insure accuracy.
- **Selective reinforcement** — provides uniform strength.
- **Permanent and complete identification marking**—saves time and eliminates errors in shop and field.
- **Wall thickness never less than specification minimum**—assures full strength and long life.
- **Machine tool beveled ends** — provides best welding surface and accurate bevel and land.
- **The most complete line** of Welding Fittings and Forged Steel Flanges in the world — insures complete service and undivided responsibility.

WeldELLS are only one of many Taylor Forge contributions to the war effort. For example: huge Rolled Steel Rings that are an important part of U. S. tanks now in action.

* *WeldELLS and many other Taylor Forge Products are produced in Byers Genuine Wrought Iron.*

(Continued from page 154)

tween purchasing, engineering, planning and production, and planning requirements against a production schedule, at their March 31st meeting which was held at the Rochester Club.

MODERN SLEUTHING HOLDS INTEREST AT WORCESTER

Detective Lieut. Thomas H. Bourgoyne, who is in charge of criminal identification, Worcester Police Department, spoke on modern techniques of his profession at a recent meeting of the Worcester Purchasing Agents Association. The talk was illustrated and proved of unusual interest. Edward C. Milde presided at the meeting.

HABERKERN TALKS AT SAGINAW

On the basis that the Purchasing Agent today is the custodian of the raw materials going into war production, President Roy C. Haberkern of the National Association impressed upon members of the Saginaw Valley (Mich.) Purchasing Agents Association, that the Purchasing Agent is the most important man in American Industry, at a recent meeting.

SENATOR BURTON ADDRESSES CINCINNATI MEETING

United States Senator Harold H. Burton was the principal speaker at a joint meeting of the Cincinnati Association of Purchasing Agents, and the Cincinnati Sales Executive Council, recently. His subject was "Congress, Business and War." The meeting was held in the Hall of Mirrors in the Netherland Plaza.

NEW ORLEANS APPOINTS NOMINATING COMMITTEE

N. B. Rhodes, A. J. Nelson, W. B. Eagan, Patrick B. Dillon and Herman Prager were appointed to a nominating committee to prepare a slate of officers for election at the May meeting of the Purchasing Agents Association of New Orleans, by President Charles J. Beck, at a recent meeting. This meeting was addressed by Kinsey N. Merritt of Elizabeth, N. J., president of the National Federation of Sales Executives.

THE MANPOWER PROBLEM DISCUSSED IN NEW YORK

On the substantial theory that Purchasing Agents are concerned with the procurement of supplies and raw materials, but that these materials are of little value unless there is personnel to handle and use them, the Purchasing Agents Association of New York is giving the subject of manpower direct attention in the belief that its members should keep abreast of the times on such problems as labor supply, "non-essential" industries, and the changes taking place. Accordingly the March 16 meeting of the association was devoted to a discussion of The Plans and Problems of the War Manpower Commission by Joseph B. O'Connor, deputy director, War Manpower Commission, New York Regional office. The afternoon forum was given over to a question and answer session on the Controlled Materials plan led by William E. Arnstein, Regional Specialist on C.M.P.

TALK ON RESEARCH AT CINCINNATI

"Research and the War" was the subject of a talk before the Cincinnati Association of Purchasing Agents at their March 9th meeting, by Larry F. Livingston, manager of the Agricultural Extension Division of the E. I. du Pont de Nemours and Company. Plans for entertaining the Sixth District officers of the National Association in April were formulated at the meeting.

VICTORY GARDENS AT DAYTON

Color films on victory gardens were shown at the March 11 meeting of the Dayton Association of Purchasing Agents. Glenn Massman was the principal speaker at the meeting which was held in the Engineer's Club.

EXECUTIVES' NIGHT DINNER AT ALBANY

The Purchasing Agents Association of Eastern New York held its annual Executives' Night dinner meeting at the DeWitt Clinton Hotel, Albany, on March 25th. Col. Willard Chevalier, publisher of *Business Week*, addressed the meeting, giving an incisive picture of the present situation, and outlining the new role of industry in our national life.

"DRIVE IT YOURSELF"—BIRMINGHAM

Harris Saunders, vice president of the Dixie Drive it Yourself System was the principal speaker at the March 18 meeting of the Purchasing Agents Association of Birmingham, on the subject "Drive It Yourself in the War".

LIVE SUBJECTS AT LOUISVILLE

Members of the Louisville Purchasing Agents Association heard J. Kenfield Morley speak on "The Five Major Fallacies of this War" at their March 16 meeting in the Kentucky Hotel. Another speaker was Prof. Charles W. Williams, University of Louisville, who discussed "Implications of Weakening Price Control. Also on the program was Paul Stadelman, magician and ventriloquist.

METROPOLITAN ASSISTANTS CLUB HAS CMP MEETING

An unusually well attended meeting of the Metropolitan Purchasers' Assistants Club held in the Midston House, New York City, March 9th, with President Wm. P. Durland in the chair, was entirely taken up with a discussion of the Controlled Materials Plan. W. E. Arnstein, Regional PRP and CMP Specialist

(Continued on page 158)

FIBRE-TEX
SWEEPING COMPOUND
enables him to remove oil easily and quickly, the dry-cleaning way. No mopping or scrubbing. No mess and no danger. This sweeping compound gives him three-way efficiency:

1. PICKS UP OIL and other fluids with amazing speed
2. WON'T BURN either from flame or spontaneous combustion
3. CLEANS BETTER —it collects dust and removes caked dirt

Wherever oil is used in shops, factories and garages, Fibre-Tex is a true necessity. Leading industrial, transportation and oil companies find it indispensable for the promotion of better plant housekeeping and safety. At our expense, we want you to try

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A LIBERAL TEST PACKAGE
will be sent FREE and post paid to executives who request it on their letterhead. Address

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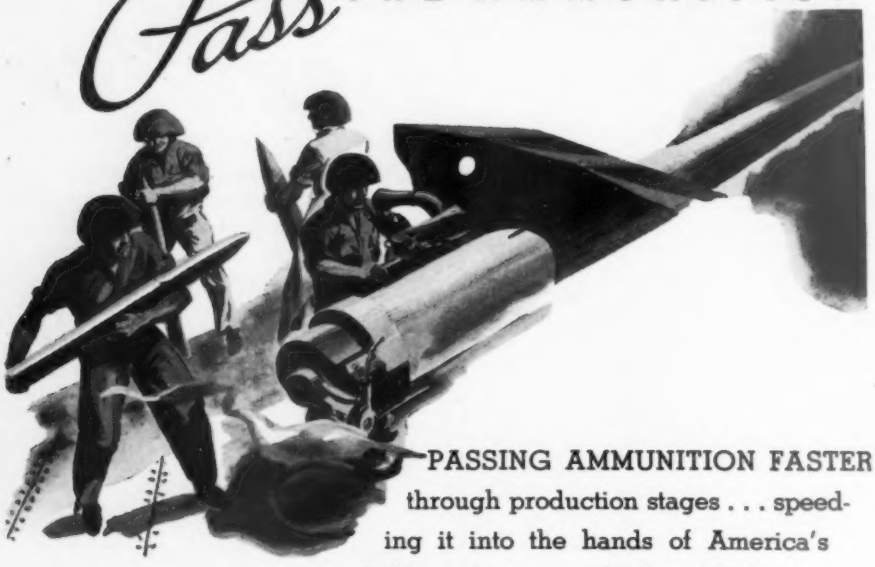
AUTOMOTIVE AND SCIENTIFIC APPARATUS AND PLASTIC MOLDING

When writing Lacey-Webber Co. please mention Purchasing

..and Pass THE AMMUNITION

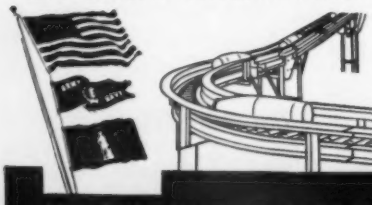


PASSING AMMUNITION FASTER through production stages . . . speeding it into the hands of America's fighting forces . . . that's a Mathews Conveyer job for the duration!

In your plant, if there is any lag in moving materials to and from men or machines, perhaps a Mathews engineer could point the way to improving this condition.

Mathews Conveyers are available for critical war materials . . . there is no surer way to shorten the war than to speed Victory at its source!

MATHEWS CONVEYERS FOR MECHANIZED PRODUCTION



If you are manufacturing war material, or anything vital to the success of the war effort, you can get Mathews Conveyers to handle that material. Rely as usual on your Mathews Engineer.

MATHEWS CONVEYER COMPANY ELLWOOD CITY PENNSYLVANIA

(Continued from page 157)

of the War Production Board, held the attention of the members with an explanatory talk on changes in the regulations that have taken place since the first of February and answered questions from the floor. Official releases from Washington on many of the regulations discussed will be found in the news columns of this issue of *Purchasing*.

CMP REGULATION NO. 5 GOVERNS MRO SUPPLIES

Use of Production Requirements Plan ratings authorized for maintenance, repair and operating supplies to purchase cranes, monorails, and similar equipment is the subject of an interpretation of Priorities Regulation No. 11 announced by the War Production Board.

The provisions of Priorities Regulation No. 11 which cover MRO supplies permit use of assigned ratings to purchase minor items of productive capital equipment but exclude from this definition any item to be used for plant expansion. The interpretation points out that cranes and monorails costing less than $200, intended to replace existing equipment or for minor relocation of plant machinery, may be considered "minor capital equipment" but that those costing more than $500 would not be so considered. Use of the MRO rating for items costing between these two sums must be considered in the light of the size of the plant, the nature of the equipment, and similar factors. In case of doubt, an application for priorities assistance should be made on Form PD-1A.

The interpretation also calls attention to the fact that Priorities Regulation No. 11A provides that Controlled Materials Plan Regulation No. 5 will govern in the case of MRO supplies to be delivered after March 31. As the CMP Regulation sets a limit of $500 on items of productive capital equipment and minor capital additions which may be purchased under its procedures, there may be some items which constitute maintenance, repair, and operating supplies under CMP Regulation No. 5 which do not fall within the definition of these contained in Priorities Regulation No. 11.

CMP REGULATION NO. 7 PROVIDES STANDARD FORM OF CERTIFICATION

Providing a single standard form of certification which may be used to validate any delivery order under the Controlled Materials Plan, CMP Regulation No. 7, has been issued by the Director General for Operations.

Use of the new standard form will obviate the necessity, which might otherwise arise in many cases, of placing several different certifications on a single order.

CMP Regulation No. 7 provides that any delivery order under the Controlled Materials Plan may be validated by endorsing it or accompanying the order with a certificate, in substantially the following form, signed manually or with a facsimile

(Continued on page 161)

NO PLACE FOR "Doubtful Screws"

—In Power Tools that Must Do Double-Shift Duty!

War production schedules have proved that motor-driven bench and hand tools deserve something better than the pre-war classification of "light duty tools". Countless grinders, drills and other tools operate on a double-shift, often substituting for heavy machines. And, they don't "give up" under the unexpected strains.

The reason lies in the policy of the builders to make "hundred-dollar" tools as though they were "thousand-dollar" machines. Every integral part must satisfy rigid standards . . . doubtful materials will not be trusted.

That policy has put Parker-Kalon Quality-Controlled Socket Screws on the "preferred list" of a good share of the power tool builders, and the makers of the motors that drive them. For P-K Socket Screws are made to the same uncompromising standard. "Doubtful screws" . . . screws that *look* all right but some of which fail to *work* right . . . are barred by the unequalled quality-control routine of the Parker-Kalon Laboratory. P-K Screws have the extra dependability to stand unexpected strains . . . yet they cost no more. Parker-Kalon Corporation, 202-204 Varick St., New York.

"Quality-Controlled" means . . .

Complete test and inspection covering; Chemical Analysis; Tensile and Torsional Strength; Ductility; Shock Resistance under Tension and Shear; Hardness; Head diameter, height and concentricity; Socket shape, size, depth and centricality; and Thread fit.

PARKER-KALON
Quality-Controlled
SOCKET SCREWS

Give the Green Light to War Assemblies

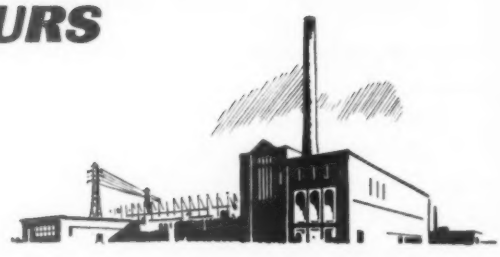
When writing Parker-Kalon Corporation please mention Purchasing

GUARD THOSE VALVES OF YOURS

New valves will be *harder* to get—even if you work directly for the war effort.

There are not sufficient materials for valves—or wear resisting parts. Allocation will reduce, still further, amounts valve manufacturers have been able to obtain for lower ratings. And control is directing the uses to which all valves are shipped.

Too few of us have the feel of this war—yet. But, it is our belief that those who need continued operation of valves will be well advised to adopt conservation and substitution right now—as part of the price loyal citizens pay for a victorious war. It is no whit smarter to try to find "angles" by which materials needed for active war can be diverted to our plants than it is for a commander in the field to withhold an order to fire—to save his own hide.



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MANUFACTURERS OF

R CAST STEEL VALVES P&C CO BRASS AND IRON VALVES

D'ESTE ENGINEERING SPECIALTIES

Reading, Pa., Atlanta, Boston, Chicago, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco

A DIVISION OF **AMERICAN CHAIN & CABLE COMPANY, INC.,** BRIDGEPORT, CONNECTICUT

When writing Reading-Pratt & Cady please mention Purchasing

(Continued from page 158)

signature as provided in Priorities Regulation No. 7:

"The undersigned purchaser certifies, subject to the penalties of Section 35 (A) of the United States Criminal Code, to the seller and to the War Production Board, that, to the best of his knowledge and belief, the undersigned is authorized under applicable War Production Board regulations or orders to place this delivery order, to receive the item (s) ordered for the purpose for which ordered, and to use any preference rating or allotment number or symbol which the undersigned has placed on this order."

If an applicable CMP regulation requires that an allotment number or symbol, preference rating or other identification be included in a certification, it must be placed on the delivery order if the form above is used.

Use of this standard form by those who wish to take advantage of it will obviate the necessity, which will otherwise arise in many cases, of placing several different certifications on a single order.

ACCOMMODATION SERVICES

Any person or firm which in March 1942 had a fixed practice of selling accommodation services at cost and without profit may charge an amount aggregating the current cost of direct labor and materials for the service, according to OPA.

A typical example of this service is an installation service rendered to the Defense Plant Corporation by a lessee of one of its plants. If the lessee in March 1942 had a practice of installing equipment owned by the Corporation and charging for such installation the direct cost of labor and material, it may continue to charge the direct cost of labor and material, even though there may have been an increase in either or both of these costs since March 1942.

At the same time OPA emphasized that this action in no way permits the inauguration of a charge for a service which in March 1942 was rendered without cost, or as part of the purchase price of a commodity, or for which a charge was made which exceeded the cost of the service to the supplier.

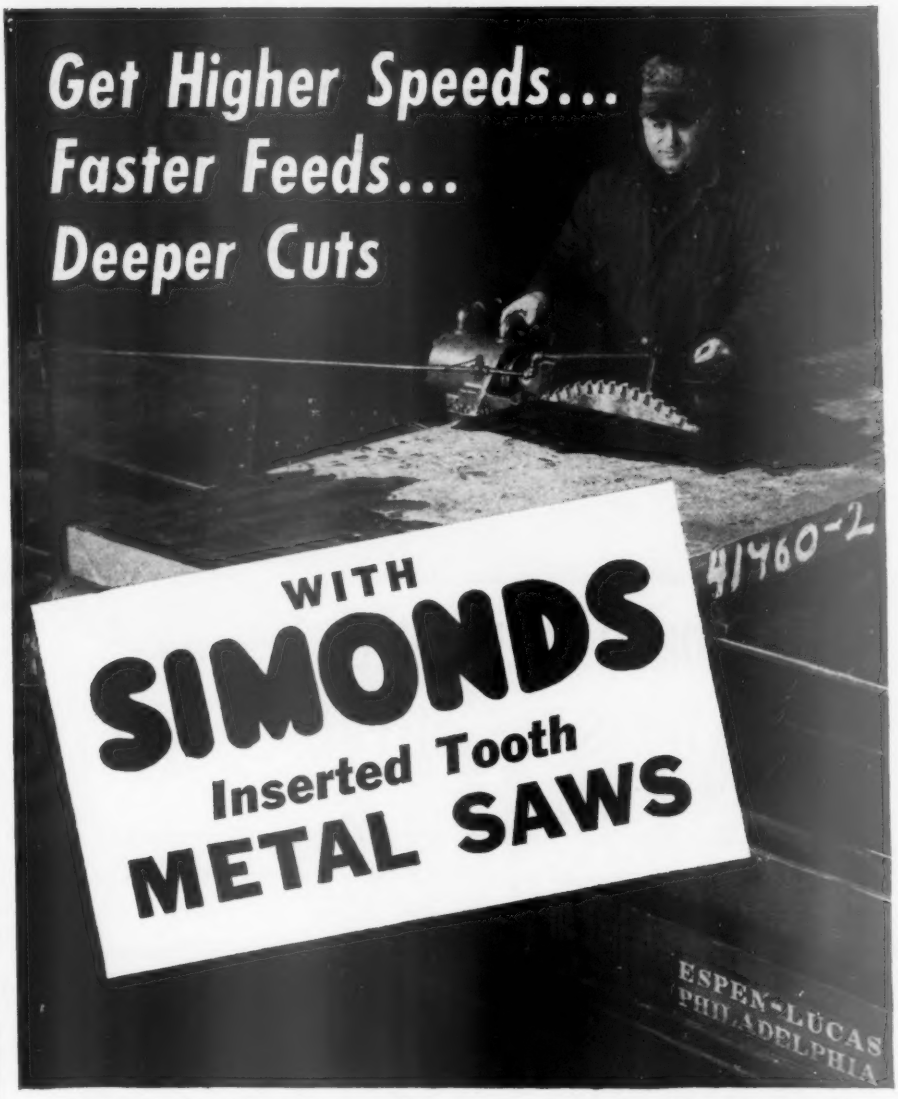
Because of increases in wage scales and in some ceiling prices of materials and occasionally because of the necessity of substituting more expensive materials for those no longer available, there is danger that many desirable services will no longer be supplied unless provision is made for a recovery of most, if not all, of the costs for the services, OPA said.

Direct labor costs must not exceed legally permitted wage rates, and the amount added for materials must be no more than actual cost to the seller or the ceiling price, whichever is lower.

Not covered by these provisions are service sales by cooperatives and nonprofit or other organizations which make sales initially above cost but later give refunds, bonuses, dividends, or other allowances to purchasers.

Many persons customarily have per-

(Continued on page 162)



High-speed steel teeth . . . *with a wedge for every tooth* . . . mean extra strength and sharply improved operating characteristics that in many cases have *doubled* metal-cutting production on billets, sheets, rods and rails. Alternating bevelled and square teeth split chips in 3 parts, and curved gullets clear them easily under heaviest loading. So chips can't weld, stick, or cause the saw to break. Teeth are readily sharpened in the plate . . . and quickly replaced, when worn out, by your own mechanics. These inserted Tooth Metal Saws are made under Simonds complete Quality-Control . . . and are under constant check in actual use in Simonds own factory. Prompt shipments on rated orders.

Operating Handbook FREE to Users of Metal-Cutting Saws

Handy pocket book tells how to get utmost service and production from Simonds Inserted Tooth Saws. Free while they last. Write today.

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SIMONDS

Famous Family of Metal-Cutting Tools

★ BOUGHT YOUR BONDS AND STAMPS THIS WEEK? ★

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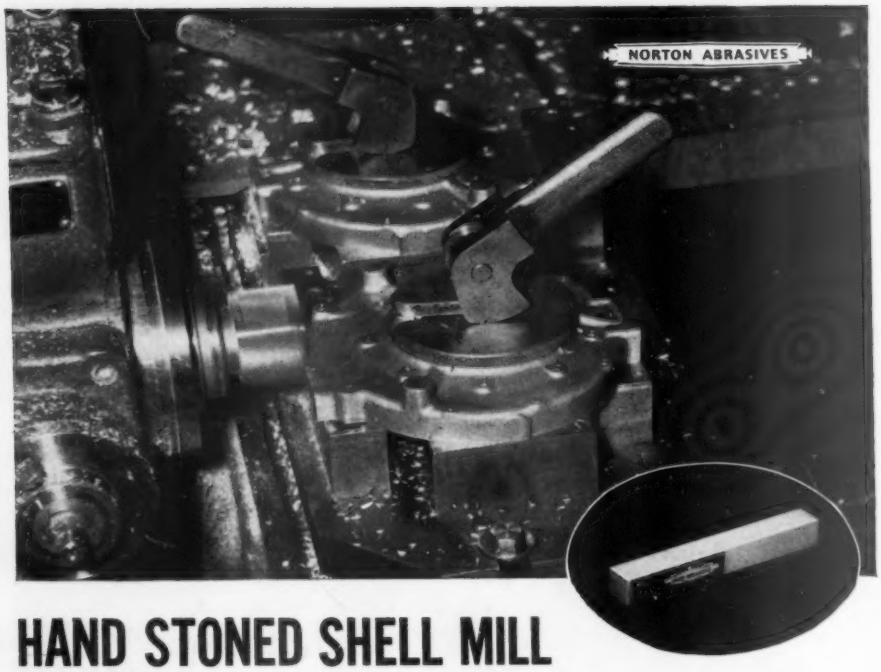


HAND STONED SHELL MILL GIVES 4 TIMES THE OUTPUT

Hand Stoning the cutter of this shell end mill resulted in over four times the production of magnesium parts for war work.

THE JOB: **Machining to size, a boss on a magnesium casting. Cut .150 on first side, .250 on the opposite side; 24 hour continuous operation.**

THE REPORT: **"With regular grinding, 67 parts were machined before failure of the milling cutter. We then stoned the same cutter by hand with a 'Hard Arkansas.' This increased production to 280 parts. High speed production on this metal means that all cutters have to be hand stoned."**

The stone used was a "Hard Arkansas" square file 3½ x ½ x ½" costing 70¢, good for years of the same high grade service.

Consider the little effort and cost to speed up and increase output; the scarce tool steel and equally precious setting-up time saved in grinding only one-quarter as often. Multiply that by the number of tool cutters you operate and see what it really means.

You can get further details from your Distributor Salesman or by writing us.

Boston, Buffalo, Chicago, Cincinnati, Cleveland, Detroit, Grand Rapids, High Point, Indianapolis, Los Angeles, New York, Philadelphia, St. Louis, San Francisco, Tacoma

BEHR-MANNING · TROY, N. Y.
(DIVISION OF NORTON COMPANY)
ALSO RELIABLE COATED ABRASIVES SINCE 1872

(Continued from page 161)

formed services at no more than actual cost and in some instances even below cost. The principal motive has been to make available special equipment, personnel, or knowledge. These services are often intermittently performed, vary in type from time to time, and are performed under circumstances making it impractical to price them in advance.

Supplementary Order No. 38 authorizing these charges, was effective March 15.

✓ ✓ ✓

ORDER U1 GOVERNS MATERIALS FLOW IN UTILITIES FIELD

The Office of War Utilities of the War Production Board for administering war activities of electric, gas, water, and communications utilties, recently issued order U-1, which replaces the former P-46 and all amendments and supplements thereto, reenacting most of the P-46 provisions. It governs the flow of materials into the entire utilities field with the exception of communications, and is the first industry order to be integrated with the Controlled Materials Plan.

An important group of provisions within the order, designed to effect sharing of material and equipment in utility inventories, requires utilities to sell surplus stocks as a condition for continuing to receive priorities assistance. These provisions are linked with the creation of regional surplus stock offices throughout the United States, through which utilities will carry on the redistribution of their surplus materials and equipment.

The order authorizes the use of a higher rating, AA-1, and a Controlled Materials Plan allotment symbol, to permit Utilities to obtain materials for maintenance, repair and minor construction. The order also, for the first time, brings under inventory regulation stocks of controlled material held by utilities for use in construction. It requires utilities to limit such holdings to their needs for the ensuing sixty days.

A sharp reduction in the inventory which may be held for maintenance and repair after March 31, 1943, is made in the new order.

Although communications is now a part of the Office of War Utilities, the telephone and telegraph industry will continue to operate for the present under maintenance orders P-130 and P-132.

✓ ✓ ✓

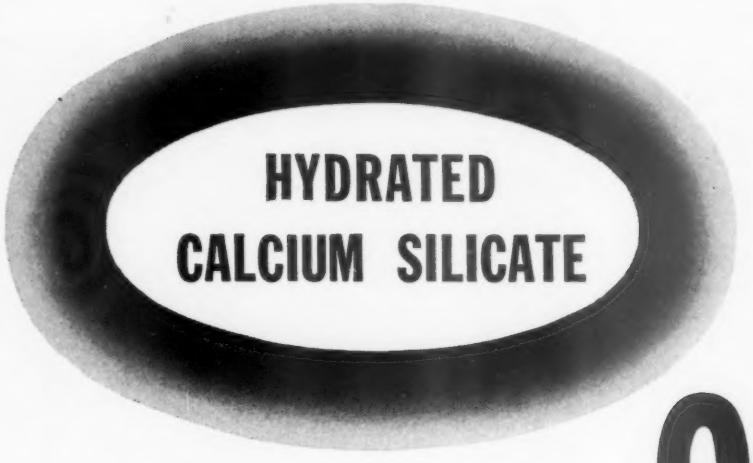
WPB AND OPA REMINDERS

Controlled Materials Plan—Following the appointment of Charles Wilson as WPB Executive Vice Chairman and the definition of this post, (NB-581) the WPB issued a General Scheduling Order formalizing existing scheduling practices and providing regular procedures for future contingencies. The new order—part of WPB's program for breaking production bottlenecks—provides specific regulations to cover the manufacture and distribution of critical components, today's number one bottleneck. (WPB-2690)

CMP Regulation 7, providing a standard form of certification for the validation

(Continued on page 165)

Can you use this new pigment?



Silene*

* Another Columbia Chemical

Blood Plasma Saves Lives—
Have You Contributed?

WHAT SILENE IS: SILENE is a new chemical pigment—a white, finely divided, precipitated, hydrated calcium silicate, with the following approximate analysis:

CaO	19.0
SiO_2	67.0
Loss on Ignition	14.0

pH in water suspension	10.1
Specific Gravity	2.10
Bulk Density	15 to 16 lb. per cu. ft.
Refractive Index	1.475

CHARACTERISTICS OF SILENE: SILENE is composed of very fine particles present in the form of small, highly friable agglomerates that are readily dispersed in the course of milling into rubber, paint, or vehicles. SILENE also can be redispersed in water.

PRESENT USES: SILENE has had rapid acceptance as a rubber pigment with outstanding results. It confers high modulus, hardness, tear resistance, and good tensile strength up to high loadings. SILENE has also found specialized use in the paint, and paper fields.

OTHER USES: Indications are that SILENE will make an important contribution in compounding a number of new rubber substitutes. Favorable preliminary tests of SILENE are being checked on a more extensive scale for use in protective coatings, plastics, cosmetics, dentifrices, ceramics, cloth coating, as a base for printing inks and color lakes, and as a filter aid.

Perhaps you can use this new Columbia product—SILENE—in your operations. Samples of SILENE will be furnished upon request, or one of our Technical Service representatives will call.

COLUMBIA Essential Industrial CHEMICALS

SODA ASH · CAUSTIC SODA · LIQUID CHLORINE · SODIUM BICARBONATE · SILENE* · CALCIUM CHLORIDE
SODA BRIQUETTES · MODIFIED SODAS · CAUSTIC ASH · PHOSFLAKE · CALCENE** · CALCIUM HYPOCHLORITE

*Hydrated Calcium Silicate **Precipitated Calcium Carbonate

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COLUMBIA CHEMICAL DIVISION

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HARPER *stocks or makes* EVERLASTING FASTENINGS

IN THESE FORMS — OF THESE ALLOYS

ITEM	Brass	Bronze	Copper	Everdur	Monel	Stainless
Cap & Mach. Screws:						
Hexagon head	STOCK	To Order	To Order	To Order	To Order	To Order
Flat head	STOCK	To Order	To Order	STOCK	STOCK	STOCK
Round head	STOCK	To Order	To Order	STOCK	STOCK	STOCK
Fillister head	STOCK	To Order	To Order	STOCK	STOCK	STOCK
Special	To Order	To Order	To Order	To Order	To Order	To Order
Bolts:						
Machine	To Order	STOCK	To Order	STOCK	STOCK	STOCK
Carriage	STOCK	STOCK	To Order	STOCK	STOCK	STOCK
Flat head	To Order	STOCK		To Order	To Order	To Order
Round head	To Order	To Order		To Order	To Order	To Order
Oval head	To Order	To Order			To Order	To Order
Hangar	To Order	STOCK		STOCK	To Order	To Order
Stove	STOCK	To Order	To Order		To Order	To Order
Special	To Order	To Order	To Order	To Order	To Order	To Order
Screws:						
Thumb	STOCK					
Lag	STOCK	STOCK	To Order	STOCK	STOCK	STOCK
Wood	STOCK	To Order		STOCK	STOCK	STOCK
Set	STOCK	To Order		STOCK	STOCK	STOCK
Knurled	STOCK					
Special	To Order	To Order	To Order	To Order	To Order	To Order
Studs	STOCK	To Order	To Order	To Order	To Order	To Order
Threaded Rod	STOCK	To Order	To Order	To Order	To Order	To Order
Nuts:						
Knurled	STOCK					
Heavy American Standard	STOCK	STOCK	To Order	STOCK	STOCK	STOCK
Light American Standard	STOCK	To Order		STOCK	STOCK	STOCK
Regular American Standard	STOCK	STOCK		STOCK	STOCK	STOCK
Machine screw	STOCK			STOCK	STOCK	STOCK
Castellated	STOCK	To Order	To Order	To Order	STOCK	STOCK
Wing	STOCK			STOCK	STOCK	
Special	To Order	To Order	To Order	To Order	To Order	To Order
Cap	STOCK	To Order	To Order	To Order	STOCK	STOCK
Washers:						
Regular	STOCK	To Order	STOCK	STOCK	STOCK	STOCK
Lock				STOCK	STOCK	STOCK
Special	To Order	To Order	To Order	To Order	To Order	To Order
Cotter Pins	STOCK			To Order	STOCK	STOCK
Rivets	STOCK	To Order	STOCK	STOCK	STOCK	STOCK

In the above table, "STOCK" means carried in stock; "To Order" means made to order. Harper stocks a total of 4320 items . . . large quantities of each. Many are "Unusual and hard to get." Besides, the Harper special order department is fully equipped with dies, tools, taps and special machinery to make a variety of "super-unusual and out of the ordinary" fastenings.

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HARPER *Chicago* EVERLASTING FASTENINGS

CLASS 5.00

Munitions makers, WPB Allocation Class 5.00, are depending on PROGRESSIVE to supply fastenings. They have learned, as have manufacturers in 20 other classes, that PROGRESSIVE products *stay put.*

The PROGRESSIVE MFG. CO.
TORRINGTON · · · CONNECTICUT

ALL SPRINGS ARE NOT EQUAL
—SOME ARE NOBLY BORN AND LAST LONGER!

LEE
Quality Springs

LEE SPRING COMPANY, Inc.
30 MAIN STREET BROOKLYN, N.Y.

(Continued from page 162)

of delivery orders, was recently issued (WPB-2734) and Copper Order M-9-a amended to place control of warehouse sales of brass and wire mill products entirely under CMP Regulation No. 4 (WPB-2725). Also, certain changes have been made in CMP Regulations 1, 3 and 4, in order to establish procedures for contingencies not previously covered (WPB-2694); and to speed deliveries of aircraft steel, an Aircraft Alloy Steel Section has been set up in the WPB Steel Division. (WPB-2671)

Prices Established—Maximum prices and methods of computing them were established for: nickel in pig iron (OPA-T-610), peppermint and spearmint oils (OPA-T-613), syrups, peanut butter and vinegar (OPA-1845), cane syrup (OPA-1819), eggs (OPA-1810), certain brands of tires (OPA-T-621), hardwood (OPA-1876), some blended fuel oils (OPA-1862), and peanuts and peanut products (OPA-1786).

Prices Adjusted—An increase of $4 a ton in the price American and Canadian producers may charge (and consumers pay) for standard newsprint paper was announced jointly by the OPA and the Canadian Wartime Prices and Trade Board. (OPA-1840) Because rising soft wheat prices in the East have put a severe squeeze on flour millers, OPA raised by about 8 percent the ceiling prices on soft wheat flour (OPA-1824), and, because of the rise in cost of molasses, authorized an advance of five cents a gallon in the basic maximum price of west coast alcohol. (OPA-1825) Slightly higher whisky prices are in prospect for New York, since the OPA order announcing alternative pricing methods for retailers of imported and packaged whiskies. (OPA-1823)

PAPER PRODUCTS MOVED TO UNRESTRICTED LIST

All limitations on production of container board, folding box board, set-up box board and special industrial boards were removed by the WPB. The amended order removes these paper products from the restricted percentage list and adds them to the unrestricted list. Manufacture of water-proof "V-boxes" for overseas shipment to the armed forces and boxes for shipment of food and materials for military and important civilian uses have made heavy demands on the container board industry, the Pulp and Paper Division of the Board announced.

MADE DIRECTOR OF SWPC

WPB Chairman Donald M. Nelson announces that on the recommendation of Col. Robert W. Johnson, Chairman of the Smaller War Plants Corporation, he has appointed J. A. R. Moseley, of Dallas, Tex., as a director of the corporation.

Mr. Moseley, who has had several years experience as a small manufacturer of airplane parts in Texas, has been serving as WPB Regional Financial Manager at Dallas. He fills the vacancy on the SWPC created by the resignation of William E. Shipley.

"War Model" Standard Terminology

Government war agencies dealing with price and material control have agreed to the standard terminology "war model" to indicate specified models of commodities designed to provide the greatest wartime serviceability at given price levels with the least drain upon manpower, critical materials, plant and transportation facilities.

This was announced by the Office of War Information after an exchange of letters between the Office of Economic Stabilization, the Office of Price Administration and the War Production Board.

The proposal for the adoption of the term "war model" originated with the Office of Price Administration and was based upon two factors.

The terms "victory model", "utility model", "simplified model" and "war model" have been used more or less interchangeably among Government officials to designate models of the type in question, and a certain amount of confusion has resulted.

At the same time, the terms "victory model" and "utility model" have been extensively appropriated by private firms to indicate brands of those firms.

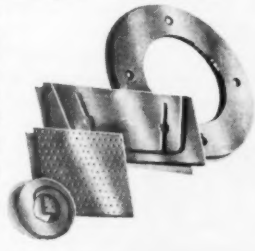
The use of this term—"war model"—will be reserved to describe commodities

(Continued on page 166)

Speeding Destruction

The business of dropping a package of "eggs" on Tojo is easier and more efficient because of sleeve type bearings. The interesting feature of this application is that it employs a bearing material as new as the war.

Johnson Pre-Cast Bearing BRONZE-ON-STEEL was developed to meet peace time applications, but, like many another product, it was easily converted to armament needs. When peace returns, manufacturers will find that Johnson BRONZE-ON-STEEL . . . combining the bearing qualities of BRONZE with the strength of STEEL . . . will give them greater bearing performance in their product. It will be available as finished bearings or in strip form for stampings. It is an ideal metal for washers or other flat pieces. Write for complete information.



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SLEEVE BEARING HEADQUARTERS

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450 S. MILL STREET NEW CASTLE, PA.

Do you want bolts that are "out in front" for toughness and strength? Do you like free, easy running threads that often save hours in assembly time? Then turn to TRIPLEX today. Our service is not bad. Write us today.

• • •

TRIPLEX SCREW COMPANY
5331 Grant Ave., Cleveland, O.

TRIPLEX CAP AND SET SCREWS BOLTS, NUTS AND RIVETS
Millions Sold •• Used in Every Industry

GET THE FACTS and You'll use SPINCRAFT METAL SPINNINGS

On planes, aircraft carriers, battleships, tanks, submarines, torpedo boats you'll find many SPINCRAFT METAL SPINNING today . . . Vital parts in a wide variety of sizes, shapes, metals, spun accurately and at lower cost — *without the use of expensive dies* — to meet the purchasing Agent's most rigid delivery schedules.

You'll want to know how SPINCRAFT can help YOU, too, on important problems of forming metal parts quickly, economically, accurately — both for today's pressing needs, and tomorrow's post-war designs.

Get the FACTS! Write NOW for Bulletin A — "Why is Metal Spinning so important to Industry today?"

Spincraft
"SKILL WILL DO IT"
MILWAUKEE METAL SPINNING CO.
3506 WEST PIERCE STREET
MILWAUKEE WISCONSIN

1-P-43

"Give us the Weapons and we'll WIN"

U. S. Army Signal Corps thru Underwood & Underwood

The industries of mighty America answer the cry. Back on the production front, **PRODUCTIMETERS** are in service on machines producing war materials...giving accurate count of production, providing exact figures for control. They're on guard to eliminate costly over-runs or under-runs . . . to conserve vital materials . . . save valuable man-hours.

There's a model and type for every industry. If you have a counting problem, write us. Our recommendations are backed by 64 years' experience in the manufacture of counting and measuring devices.

Catalog No. 100 sent on request!

DURANT MFG. CO.
1959 N. Buffum St. Milwaukee, Wis.
159 Eddy St. Providence, R. I.

(Continued from page 165)

which meet the requirements of specifications designated as "war models" in production and price regulations issued by government war agencies.

Backing the proposal for the change was the Inter-Departmental Advisory Committee to OPA's Standards Division of which Dr. Faith Williams, Chief Cost-of-Living Division, Department of Labor, is chairman. The membership of this Committee includes representatives of all Federal agencies concerned with problems of standardization.

HIGH PREFERENCE RATINGS FOR CONTAINERS

In order to assure adequate distribution of shipping containers for the packaging of military and civilian products, producers and shippers of military combat equipment, Lend-Lease materials, foods, and many other essential items are assigned high preference ratings for the procurement of shipping containers.

The order (P-140) issued by the Director General for Operations, benefits a number of industries, and assures containers for the shipping of many millions of dollars worth of products. Included among those aided are farmers, manufacturers, tobacco processors, flour millers, bottlers, textile mills, chemical plants, meat packers, fishermen, and others.

It covers all outer wooden containers which are made from lumber, veneer, plywood, or staves, and outer shipping containers which are made from corrugated or solid fibre. It also includes parts such as shooks, cleats, staves, veneer, plywood, corrugated or solid fibre which are cut for these containers.

Under its provision, preference ratings are assigned for the procurement of shipping containers according to the importance of use.

The ratings and the containers to which they may be applied follow:

AA-1 for containers for U. S. military combat such as aircraft, ammunition, armament and weapons, tanks, vehicles, emergency rations, certain canned foods and medical supplies.

AA-2X for containers for other military items, for Lend-Lease products, for export shipment, and for foods set aside for purchase by government agencies under Government order.

AA-3 for containers for the products specified on List 3 of the text of the order.

AA-4 for the containers for the products on List 4.

AA-5 for the containers for the products on List 5.

These products are not the only essential products being produced, but they will not require all of the containers produced. Accordingly, there will be millions of containers available for products which are not listed. If a producer or shipper experiences difficulty in securing containers without a rating, he may apply for a rating on Form PD-802.

Although the order establishes ratings on the order of relative essentiality of various products for the armed forces

(Continued on page 168)

Wartime Adhesive Service

ROUTINE CALLS: With many of our Service Engineers now in military or Government positions, and others handicapped by restrictions on gasoline, tires, etc., routine calls will be minimized. However, our service to you will always be our first concern. If you will let us know when you need help or service, we will see that a capable man is available to you on short notice.

DELIVERIES: These take longer today. Please watch your stocks and order well in advance. Also, if possible, increase the size of individual orders.

CONTAINERS: Larger unit packages not only save money and floor space, but help relieve the container shortage. Please send back all returnable containers to us, properly coopered, as soon as empty. Note, too, that some types of containers are no longer available.

PRIORITIES: If you have, or can obtain, a preference rating applicable to the products we furnish, please extend it with your orders, and give us the proper symbols. We must have these so that we, in turn, can protect our requirements of chemicals and other raw materials, maintenance supplies, transportation facilities, etc. which are necessary to our operation, and hence to our ability to serve you.

Your full cooperation will help us to help *you*.

NATIONAL ADHESIVES

DIVISION OF

NATIONAL STARCH PRODUCTS INC.

820 Greenwich Street, New York

When writing National Starch Products Inc. please mention Purchasing

CERTAINLY--It Helps Protect America's Essential Weapons

The men and women in our war plants are America's most essential weapons. They MUST be kept on the job. Help prevent the millions of hours needlessly lost from work each year as the result of occupational diseases.

LAN-O-KLEEN* is a powdered soap of *mildly* alkaline reaction compounded with granular corn-meal which has been impregnated (by an exclusive process) with lanolin, an oil almost identical to the natural oils secreted by the skin glands. Lan-O-Kleen works mildly and without harsh chemical action as it cleans the hands, and the lanolin helps nature to maintain a normal, healthy skin condition.

WEST PROTECTIVE CREAMS act as an external protection when rubbed on the exposed skin. These creams help guard the workers from most of the wide variety of skin irritants which may lead to dermatitis. A West specialist will help you determine which of the many West Protective Creams are best suited to protect the workers against the specific irritants handled in your industry.

*Trade Mark Reg. U.S. Pat. Off.

55 BRANCHES • HELPING TO GUARD INDUSTRIAL HEALTH • COAST TO COAST

CLIP TO YOUR BUSINESS LETTERHEAD PLEASE

West Disinfecting Company, Dept. P, 42-16 West Street, Long Island City, N. Y.

Please send me a SAMPLE QUANTITY of Lan-O-Kleen with which I will give your claim a practical test. Please include folder explaining its use.

Name_____ Title_____

WEST DISINFECTING Company

42-16 WEST STREET • LONG ISLAND CITY • N. Y.

When writing West Disinfecting Company please mention Purchasing

(Continued from page 166)

and civilians, it also gives consideration to the degree to which the products can be satisfactorily packaged in more than one type of container. For example, the order does not imply that fresh fruits and vegetables in List 3 are more essential than those in List 4. However, products in List 4 can be packed either in wood or in fibre boxes, and in some instances, in paper or textile bags. Consequently, containers for List 4 products do not require as high a rating as those which can be packed only in wood.

Ratings assigned under this order will be the only ratings (other than AAA ratings) usable for the purchase of wooden and fibre shipping containers regardless of any other order or certificate. They may be applied by any user of wooden and fibre shipping containers, and extended by anyone to obtain such containers or cut to size parts. They may be applied to any existing unfilled order for shipping containers or parts placed prior to February 24, 1943. Existing ratings, inconsistent with Order P-140, remain valid for such orders only if the container or cut-to-size parts were delivered or in transit before March 11. The ratings assigned by P-140 must be applied in accordance with Priorities Regulation No. 3.

Application, extension, and acceptance of other ratings are subject to two restrictions:

1—No person receiving a rated order for the delivery of shipping containers or cut-to-size parts may extend such rating to obtain any materials (other than those defined by P-140) for the manufacture of shipping containers or parts. However, if the person receiving the rated order acquires shipping containers or parts for re-delivery without fabrication by him, other than the assembly of parts, he may extend the rating to such purchases.

This applies notwithstanding any provisions of any other preference rating order, certificate, or any other priorities regulation, or regulation applicable to the Controlled Materials Plan. The order makes it clear that the ratings may not be used by manufacturers of shipping containers and cut-to-size parts for the procurement of materials.

2—Notwithstanding any contrary provision of any priority regulation or regulation applicable to CMP, no manufacturer eligible to use the ratings assigned by today's order is ineligible because he is PRP unit.

WPB MAKES APPEAL FOR RAILROAD WATCHES

Anyone having a railroad watch which he does not use for essential purposes can contribute to the war effort by selling it for railroad use, the Consumers Durable Goods Division announces. This appeal to the public followed discussions at the Railroad Watch Manufacturers Industry Advisory Committee meeting with officials of the Division recently and was made because of an acute shortage of these exact timepieces.

Anyone willing to sell his railroad

(Continued on page 120)

ALUMINUM HEADS

are just one of the many parts for America's fighting planes where Howard nonferrous castings are effecting weight savings—savings which impart higher speed or greater fire power, heavier bomb loads or more substantial armor.

As the nation's largest jobbing producers of magnesium and nonferrous castings, much has been expected of us in the war effort. We are proud of delivering more than was expected in large tonnages of cast parts of magnesium, aluminum, brass and bronze for America's planes, tanks, tank destroyers, ordnance, ship and armament-making machinery.

Nonferrous castings from the three Howard foundries are proving their value today in a myriad of armament applications, many of which are quite new and of which nothing can now be told. These uses, however, are definitely indicating important peace-time applications for aluminum, brass, bronze and magnesium castings in which the Howard foundries are due to figure prominently.

May we help your armament production with better nonferrous castings?

For armament today — for utility tomorrow.

Howard Foundry Company
4900 Bloomingdale Road Chicago

FOR VICTORY BUY UNITED STATES WAR BONDS AND STAMPS

ARMY E NAVY

HOWARD
ALUMINUM · BRASS · BRONZE · MAGNESIUM
CASTINGS

When writing Howard Foundry Company please mention Purchasing

(Continued from page 168)

watch into essential use can take it to his nearest retail jeweler, who will direct him to the local railroad watch inspector, if the jeweler himself does not act in that capacity. Or, an inquiry addressed to the Watch and Clock Unit of Consumers Durable Goods, War Production Board, Wasington, D. C., will bring the necessary information.

★ ★ ★

IRON & STEEL PRODUCTS EXTRAS

Resellers of iron and steel products were authorized by OPA to pass on certain "extras" which they are required to pay the mills. At the same time, a provision was added to the Resale of Iron and Steel Products Schedule, allowing resellers to apply to OPA for new maximum prices on imported steel which will allow them compensation for increased costs.

★ ★ ★

URGE SERVICE INSTITUTIONS TO FAMILIARIZE THEMSELVES WITH CMP REGULATIONS ON MAINTENANCE AND REPAIRS

The Service Equipment Division is studying plans to assure continued operation of the country's hotels for the duration without curtailing essential services, according to Nathaniel G. Burleigh, Director of the Division. C. E. Reinholt of the Hotel and Restaurant Section urges hotel owners in coping with their repair and maintenance problems to familiarize themselves with established procedures for applying for priority ratings where they are necessary.

Hotel managers requiring maintenance parts and equipment should first endeavor to purchase the necessary material from a distributor, since this would not involve the necessity of applying for a preference rating.

They are asked to familiarize themselves thoroughly with provisions of the "P" orders assigning blanket ratings for procurement of maintenance and repair parts, again making unnecessary formal application for a rating. In this connection, hotel managers are urged to study provisions of CMP Regulation No. 5, setting up procedures for getting maintenance and repair materials, which became effective March 31.

If neither of these two approaches is feasible, hotel managers should anticipate their requirements to allow time to file PD-1A applications with the War Production Board for ratings for procurement of specified items.

In cases of serious emergencies hotels may request "Emergency Assistance" for an immediate preference rating from the District WPB office or from the Hotel and Restaurant Section, Service Equipment Division.

★ ★ ★

GENERAL LIMITATION ORDER L260 CURTAILS FURNITURE PRODUCTION

Prohibition of new patterns for wood furniture and an approximate two-thirds cut in the number of existing patterns on July 1 have been ordered by the Director General for Operations.

At the same time, limitations on the use of iron and steel for manufacture of wood furniture were imposed, effecting a saving of approximately 22,000 tons of iron and steel annually.

In addition to all items commonly classified as furniture, the new order—General Limitation Order L-260—applies specifically to venetian blinds, frames used in production of furniture, barber and beauty shop furniture, and store display equipment and show cases.

Not covered by the order are baby cribs, high chairs, baby toilet chairs and seats, and bathinettes; office furniture and equipment as covered by L-13-a, as amended; metal household furniture as defined in L-62, as amended; bedding products as defined in L-49, as amended; hospital, medical, dental, and related equipment as covered by List A of M-126, as amended; refrigerators, wooden lockers for offices and factories; wooden shelving; wooden factory and industrial equipment; wooden filing cabinets and all wood furniture specifically designed for use in offices.

The action limits manufacturers of wood furniture to no more than 35 per cent of the patterns offered during Sep-

(Continued on page 172)

THE BETTER BEARINGS FOR
TODAY AND TOMORROW

● This remarkable Bunting Bronze Bearing is only one example of how Bunting is providing in new forms the traditional strength, staying quality and shock resistance of sand-cast Bearing Bronze for applications in all the great machines of war on land, sea and in the air. This Bunting Bearing is found in the intricate machinery of American battleships, cruisers and destroyers.

★ ★ ★

● Saving money, time and labor in the battle for production in thousands of busy plants are Bunting Factory-Finished Bearing Bronze Bars and Bunting Standardized Bronze Bearings. Available in many different sizes from stock, these completely finished bearings are ready for assembly in machine tools, electric motors and industrial machinery of all kinds. Ask your wholesaler . . . Write for catalog today. The Bunting Brass & Bronze Company, Toledo, Ohio. Warehouses in All Principal Cities.

Bunting
BRONZE BUSHINGS • BEARINGS • PRECISION BRONZE BARS

When writing The Bunting Brass & Bronze Company please mention Purchasing

"HEY! . . tryin' to kill yourself?"

Foremen's warnings may seem a bit harsh to an inexperienced welder. He doesn't realize that water near his electric welding job is an ever-present source of danger.

Young welders find it hard to believe that in either oxy-acetylene or electric welding, removing goggles or helmet may cause painful eye burns. That dusts and gases floating over welding operations may cause deadly fires and explosions. So production executives are calling attention to National Safety Council warnings, some of which are shown at the right.

A Few of Many National Safety Council Suggestions for Safe Welding

GENERAL

1. Wear clothing that protects against sparks and is free from oil or grease.
2. When welding, see that any nearby combustible materials are removed or properly protected.
3. Be sure no inflammable or explosive gases or vapors are present.

ELECTRIC WELDING

1. Keep the skin covered and wear approved helmet to protect eyes, face and neck.
2. When working in wet place be sure to insulate yourself against grounding and avoid use of cables with defective insulation.
3. See that helpers who must be exposed to rays wear helmets.
4. See that screens are provided to protect other nearby workers from injurious rays.

OXY-ACETYLENE WELDING

1. Wear goggles to prevent injury to eyes.
2. Keep oil and grease away from welding equipment.
3. Keep all connections tight.
4. Don't tamper with safety devices on gas cylinders.

We make our contribution to war welding through the Page Steel & Wire Division of the American Chain & Cable Company, Inc. which manufactures welding wire and rod. We do everything we can to make certain that these products will provide strong, enduring welds.

Welding wire and rod are among the many products we make for industry, transportation and agriculture, essential in peace, vital in war.

•

The American Chain & Cable Company is happy to cooperate with the National Safety Council in its nation-wide campaign to "Save Manpower for Warpower"—which is now being conducted at the request of President Roosevelt.

In Business for Your Safety

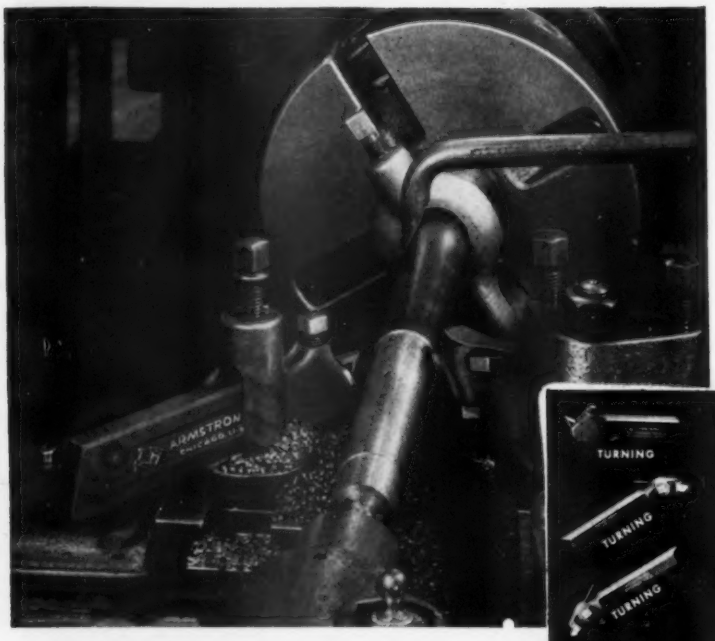
AMERICAN CHAIN & CABLE COMPANY, Inc.

BRIDGEPORT, CONNECTICUT In Canada—Dominion Chain Company, Ltd. • In England—The Parsons Chain Company, Ltd., and British Wire Products, Ltd.

Aircraft Controls, American Chain, American Cable Wire Rope, Campbell Cutting Machines, Ford Chain Blocks, Hazard Wire Rope, Manley Garage Equipment, Owen Springs, Page Fence and Welding Wire, Reading Castings, Reading-Pratt & Cady Valves, Wright Hoists and Cranes

When writing American Chain & Cable Company, Inc. please mention Purchasing

ARMSTRONG



ARMSTRONG TOOL HOLDERS

will carry you thru the war and also the Reconstruction

Great as has been the demand for ARMSTRONG TOOL HOLDERS for tooling new lathes, planers, slotters and shapers; and for re-tooling thousands of existing machine tools for new war work, no vital war work has been held up for want of them.

In the universal use of these efficient multi-purpose tools, lies one of America's great industrial advantages — America's ability to (1st) change-over immediately to the manufacture of war tools, jigs and fixtures, (2nd) the ability to safely step-up speeds and feeds to the full capacity of the machine tool — for ARMSTRONG TOOL HOLDERS will stand up to any cut a machine tool can attain, (3rd) the ability to make each ounce of critical high speed steel do 10 times the work it can do in countries dependent on hand forged tools — ARMSTRONG TOOL HOLDERS save 90% High Speed Steel.

When the war is won these same ARMSTRONG TOOL HOLDERS will give America the same advantages in changing back to peacetime industry . . . for ARMSTRONG TOOL HOLDERS are permanent tools that give many years of service.

Write for Catalog.

ARMSTRONG BROS. TOOL CO.

"The Tool Holder People"

303 N. Francisco Ave. Chicago, U. S. A.

Eastern Warehouse & Sales: 199 Lafayette St., New York

Here—Millions of BOLTS-NUTS-SCREWS for Defense—

These are the products you can use on production job after production job with the assurance that General Screw Manufacturing Company products will help you standardize, with uniformity, for economy and speed in production.

GENERAL SCREW MANUFACTURING CO.

1234 W. MONROE ST. CHICAGO, ILL.

(Continued from page 170)

tember, 1941, or to 24 patterns—whichever is greater.

On and after March 15, production and sale of wood furniture in new patterns are prohibited.

"Pattern" is defined in the order as any piece of furniture having its own identification and selling price, except that where two or more pieces of furniture are identical in every respect other than color, finishing materials, fabric, leather, or other outer covering, but have the same selling price, these, too are considered one pattern. Two or more pieces of furniture are also considered to be of just one pattern, whether they are priced the same or not, if they are identical except for different methods of joining or different content of essential metal parts. However, two or more pieces of furniture, identical except for being cut in different woods or veneers, or containing different trims other than handles, are considered two or more patterns regardless of whether they carry identical identifications and selling prices. Similarly, a suite of furniture of two or more different pieces constitutes two or more patterns.

The metal restrictions permit the use of iron and steel only for certain specified essential metal parts, principally joining hardware. As defined in the order, there are nails, brads, tacks, screws, bolts, nuts, hanger bolts, rivets, staples, washers and burrs, button molds, hinges (except hinge mechanisms for sofa beds), catches, strapping, top fasteners, drawer clips, shelf supports, domes and glides, bed fasteners, bed packing hooks, corrugated fasteners, table locks, table cleats, mirror clips, angle braces, caps for leg tops of folding chairs, expansion shells, operating hardware for venetian blinds, and venetian blind center supports for head rails and tilt rails.

Preferred orders—for the Army, Navy, Maritime Commission, and War Shipping Administration—are exempt from the provisions of L-260.

Provisions of L-260 apply to every manufacturer who produces any item of furniture as defined in the order and also to every manufacturer engaged in the business of making or asembling hardware or metal parts specifically intended for use in those furniture items covered.

* * *

FIBRE DRUMS AUTHORIZED FOR PAINTS

Fibre drums (5 gallons) for paints, varnishes, lacquers, etc.: Because of the present emergency and until further order, the ICC in Docket 3666, have authorized Paints (other than Aluminum, Bronze, and Gold Paint), Enamel, Varnish, Shellac, and Lacquer, with flash point above 20°F. shipped in fibre drums, ICC Specification 21-B, except that drums must be able to withstand one drop from a height of 2 ft. on chime at bottom, and one drop from a height of 2 ft. flat on top in lieu of the 4 ft. drop test prescribed by Para. 6 (a) of Specification 21-B. Detailed specifications will be published presently in Supplement 6, Topping's Freight Tariff No. 4.

IF IT'S PIPING CONTACT FLORI

The construction of a U. S. Destroyer requires huge quantities of fabricated pipe and plate steel products. All this is within our scope:

Fabricated Piping—for steam, water, air, oil, gas, chemicals • Random mill or cut lengths, bent, coiled, welded, flanged, threaded • Valves, Pipe Fittings.

In brief: anything in tubular or plate steel fabrication. *Send us your inquiries.*

OFFICIAL U. S. NAVY PHOTOGRAPH

FLORI PIPING

THE FLORI PIPE COMPANY • ST. LOUIS, MO.

When writing The Flori Pipe Company please mention Purchasing

Armour's Fibre Combination Sanding Discs Help Get Wartime Jobs Out . . . And Fast!

It'll take you three minutes to read this . . . and it may save your customers plenty of production hours . . .

Because this ad tells you the important points about Armour's Fibre Combination Sanding Discs, and how they fit into the production picture.

These hard, sharp, clean-cutting discs are made with aluminum oxide grains, firmly embedded in vice-like Armour glue on a cloth and fibre backing.

They're designed to cut cleaner, faster, longer.

They're available in the sizes and grades your customers need for the jobs they're turning out right now.

And because rugged performance is built into every Armour Fibre Combination Sanding Disc, they're helping to speed up production right now in important war plants where maximum performance counts!

Today, find out about Armour's Fibre Combination Sanding Discs. Let Armour's Technical Counselors show you what these fast, efficient, long-lived abrasives can mean. Write or call Armour's Sandpaper Works.

Quick Service From Branches In

BOSTON	NEW YORK	PHILADELPHIA	MILWAUKEE
DETROIT	PITTSBURGH	CLEVELAND	INDIANAPOLIS
ST. LOUIS	SAN FRANCISCO	LOS ANGELES	SEATTLE
	HIGH POINT, N. C.	CINCINNATI	

ARMOUR SANDPAPER WORKS

DIVISION OF ARMOUR AND COMPANY

1355 WEST 31ST STREET • CHICAGO, ILLINOIS

NUTRITION GUIDE FOR INDUSTRIAL DIETITIANS

To meet an ever increasing demand for a simple and instructive method for getting more and more war workers to eat the kind of foods that will help keep them healthy and on the job, the General Electric Consumers Institute at Bridgeport, Conn., announces publication of a Master Nutrition Guide.

This new manual is designed for use by industrial dietitians, home economists, school teachers, home demonstration agents, department store merchandisers and all others interested in spreading the gospel of good nutrition through group education.

The Master Guide contains information and plans on: (a) how to present nutrition instruction which will get the story across in the factory and in the home; (b) how to build advance interest in nutrition schools; and (c) how to maintain audience interest for the length of the course.

The nutrition course offered in the Master Guide can be given over a period of either three or four weeks, and has already been successfully staged in several General Electric factories as well as utilities, department stores, and an army ordnance plant. The course was reviewed by the Nutrition Division of the office of Defense Health & Welfare Services, Washington, D. C.

Copies of the Master Nutrition Guide are offered free in single copies to instructors who plan to use the course. Additional quantities may be obtained at cost.

SUBSTITUTE FOR PETROLEUM SULFONATES FOR CUTTING OILS

Diversion of petroleum sulfonates from cutting oils, required for machining of planes, tanks, and guns, has been met by use of various soluble rosin derivatives developed in peacetime by Hercules Powder Company chemists.

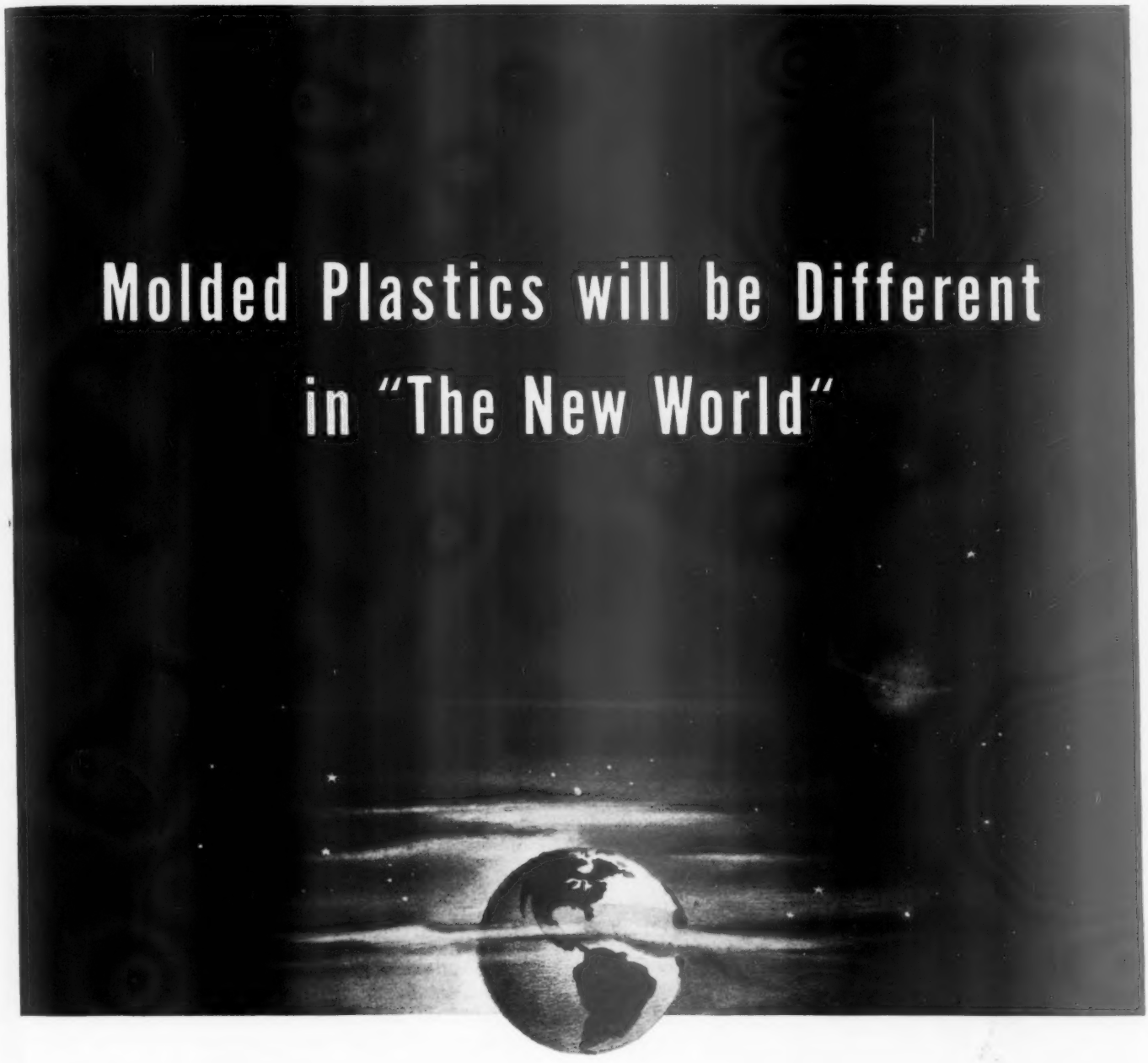
Called Dresinates, this growing family of emulsifiers produced by Hercules from pine wood has been found effective as extenders, and in some cases as complete replacements for petroleum sulfonates, now on allocation.

Extensive laboratory and industrial tests with Dresinates have enabled chemists to reduce the proportions of the war-scarce emulsifiers in cutting oils. It has been found now that blends of a Dresinate and petroleum sulfonate are more stable and more efficient, especially in hard water, than the oil-in-water emulsions obtained with straight petroleum sulfonate.

The Dresinates are currently available without priorities. They are prepared and ready for use, thereby eliminating special cooking procedures and tie-up of equipment costing time and labor. Each Dresinate is uniform in quality throughout.

Known in the trade by such names as mahogany soap, and mahogany sulfonate, the petroleum sulfonates were put on allocation under Order M-188 last November. Only limited amounts are still available for the soluble oils needed where metals are cut or formed, to lubricate and cool the tools and dies.

When writing Armour Sandpaper Works please mention Purchasing



When the eagles of war have vanished from the skies and the dove of peace lodges with us again—

And we go back to our old jobs of producing for civilian needs, we are all going to find many surprises. Things will not be just the same. Products and processes have been undergoing great change—in molded plastics, too.

We, ourselves, have been changing at General Industries. The necessities of wartime production have presented challenges that have enlarged our vision and sharpened our skills.

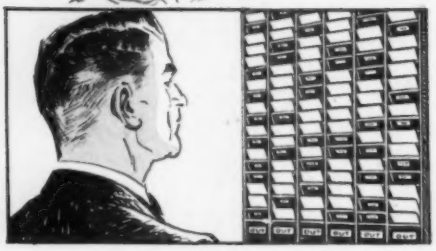
So that when the present big job has been finished, General Industries will be eminently qualified to produce molded plastics parts adapted to the rapidly expanding needs of the postwar world.

THE GENERAL INDUSTRIES CO.
Molded Plastics Division • Elyria, Ohio
Chicago: Phone Central 8431 New York: Phone Longacre 5-4107
Detroit: Phone Madison 2146 Milwaukee: Phone Daly 4057
Philadelphia: Phone Camden 2215

GENERAL INDUSTRIES
MOLDED PLASTICS

When writing The General Industries Co. please mention Purchasing

Are you fighting ABSENTEEISM blind-folded?



DO YOU know the *real causes* of your absenteeism? *Don't guess!* There are eleven major causes—many of them "curable." Which of the eleven are sabotaging your production?

DO YOU have records that spot inexcusable absences—that identify production "slackers"—that give you a basis for action against preventable causes of absenteeism?

DO YOU have *facts* on the causes and trends of your absenteeism—facts that supply the ammunition needed to attack your own problem quickly, efficiently, and effectively?

When you know the Causes and Trends

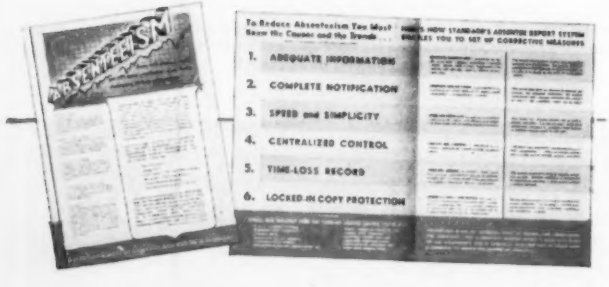
YOU CAN REDUCE ABSENTEEISM!

ABSENTEEISM is like a disease. You can't cure it until you know what *causes* it. To make it possible for war industries to diagnose absenteeism so that it can be cured, Standard offers its Absentee Report System. This System, readily adaptable to your own operations, offers the simplest, easiest way to get to the heart of your absentee problem.

The Standard System gets complete facts on every instance of absenteeism—centralizes the job of fact-finding—provides records easily tabulated and analyzed for *action*. It keys in with all departments concerned, gives a Time-Loss record complete in every detail—keeps a master, locked-in copy of all records. And because it puts all the facts in *black and white* it makes workers "think twice" before they "knock-off" for inexcusable reasons.

The Standard Absentee Report System gives you the information needed so that effective remedies can be applied. And it gives you this aid quickly and at small expense.

MAIL THE COUPON for our presentation—"ABSENTEEISM"—and see for yourself how the loss of vital man-hours can be materially reduced if you are equipped to discover the causes.


ABSENTEEISM
To Reduce Absenteeism You Must Know the Causes and the Trends . . .
1. ADEQUATE INFORMATION
2. COMPLETE NOTIFICATION
3. SPEED and SIMPLICITY
4. CENTRALIZED CONTROL
5. TIME-LOSS RECORD
6. LOCKED-IN COPY PROTECTION

★ Standard is the ORIGINATOR, in continuous business forms, of these distinctive marginally punched holes. They are Marks of Identity of the continuous forms of The Standard Register Company—"the Forms with the Punch."

Standard Systems
OF INDUSTRIAL CONTROL

THE STANDARD REGISTER COMPANY
403 Albany Street, Dayton, Ohio

Send me your presentation on "ABSENTEEISM," together with full facts on the Standard Absentee Report System.

NAME_____

FIRM_____

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Business MACHINES and Stationery STORES

Planning to Meet

C. M. P. REQUIREMENTS

Text on Procedure, Suggestions and Records Prepared by Logistics Department of International Business Machines Corp.

C. M. P. implies planning, as confirmed by Regulation No. 1 and 2 of January 12, 1943, (revised February 8), and the object of these regulations is to make planning more generally applicable. Efficient use of manpower, machines and materials has long been the hope of all industry. While meeting the requirements of C.M.P. in the months to come, many manufacturers may at the same time take advantage of conditions which open new horizons for production planning. In this, Purchasing Agents have not only a major responsibility, but the opportunity for effectively coordinating their activities with the planning and production departments.

The Controlled Materials Plan is primarily a mechanism to control the use of raw materials. It is designed also to encourage the speed and efficiency of converting raw materials into usable finished products by limiting inventories and by obtaining a better balance of both products and their components. In this study on Planning to meet C.M.P. requirements, attention is called to the fact that there are exceptions to portions of C.M.P. Regulations quoted, and these exceptions also should be studied.

How C.M.P. Affects Planning

Control is exercised at both ends of the production process. C.M.P. Regulation No. 1, paragraph "N" outlines the manner in which production schedules are authorized, and paragraph "O" calls for compliance with the schedule. Of particular interest in the sentence, "A Person shall be deemed to exceed an authorized production schedule if his completion of finished products exceeds the limits authorized, or if his rate of fabricating, assembling or otherwise acquiring raw materials, or parts, exceeds the practical working minimum required to meet the authorized production schedule."

Regulation No. 2, paragraph "b", sub-paragraph "1" states that "No user of controlled materials shall, after April 1, 1943, accept delivery of any item of controlled material if his inventory of such item is, or will by virtue of such acceptance become, greater than the quantity of such item he will be required by his current practices to put into use during the 60-day period for production, construction, operating supplies, or maintenance or repair, in order to carry out his authorized operations." Without scheduled procurement and consumption of materials, compliance with this regulation is likely to be difficult.

Inventories

A review of the purpose of inventories is in order at this time. If planning and scheduling could be perfected so that materials and parts would constantly flow through procurement and production in the exact quantities required, inventories could be eliminated entirely. Since perfection is not possible, limited raw materials and parts inventories are essential. Although inventories cannot be avoided, they can be reduced and controlled by proper scheduling. In normal times, all

EXHIBIT A
DELIVERY SCHEDULE

Month	19	20	21	22	23	24	25	26	27	28	29	30
Scheduled Delivery . . .	100	120	115	130	130	140	150	150	150	150	150	150

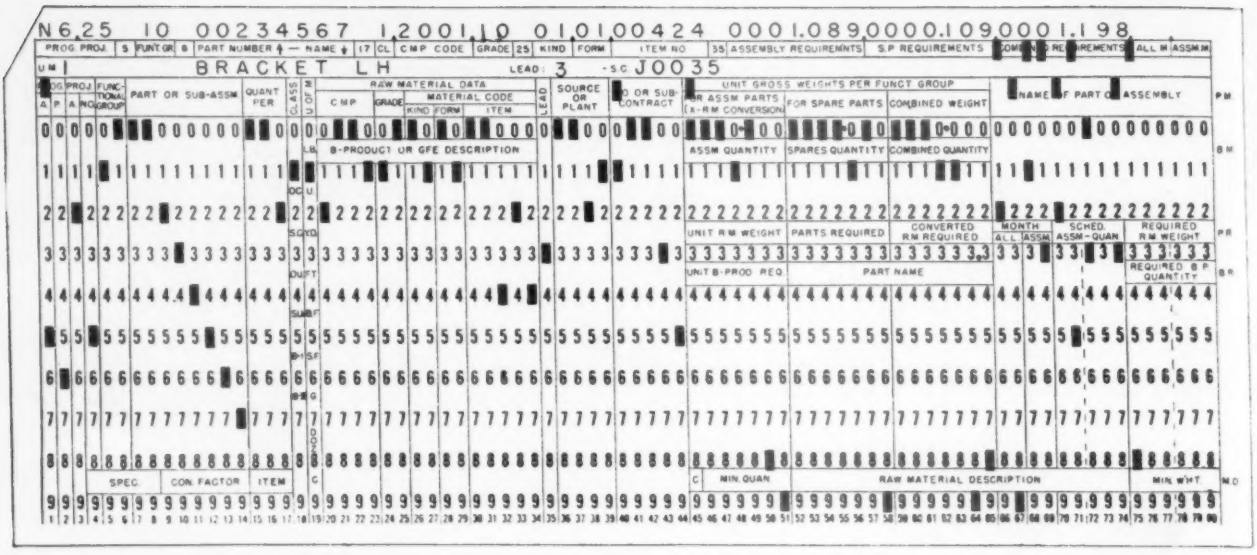
BILL OF MATERIALS—REQUIREMENTS FOR 19th MONTH

Item	Part	— Raw Material — Kind	Form	Item	U. M.	Lead	Schd.	Unit Mat. Wht.	Sch. Wht.
1 . .	12386	01	12	00015	lbs.	2	115	10.005	1150.575
2 . .	12818	01	12	00015	"	3	130	2.168	281.840
3 . .	13916	02	01	00150	"	4	130	3.157	410.410
4 . .	14154	01	01	00012	"	2	115	1.224	140.760
5 . .	14155	02	01	00136	"	2	115	19.316	2221.340
etc.									

Quantity requirements can be similarly computed for B-Products and parts.

Exhibit "A"—See Text on Page 180

EXHIBIT C



Key to right: P.M.—Parts Master. B.M.—B-Products Master. P.R.—Parts Requirements. B. R.—B-Products Requirements. M.D.—Material Description. **Exhibit C—See Text on Page 183**

inventories can be placed into three categories according to the purpose served.

1. "Speculative-or-hedging" inventories built up to profit from low prices or to avoid a loss due to rising prices.
2. "Convenient" inventories established with generous safety margins to guarantee adequate stock at all times, but without equal consideration toward avoiding excesses.
3. "Essential" inventories—only those materials required for current processing, or parts required for current assembly, with reasonable allowance for late deliveries and exceptional rejections.

Existing price regulations have removed the incentive for inventories of the first type. Convenient inventories are usually the result of inadequate knowledge as to fluctuating requirements, and these can be reduced to essential levels by planning and scheduling if adequate supplies of raw materials are made available.

Inventory Control

The most direct and accurate method of controlling raw material inventories has the following characteristics.

1. Raw materials required for production during a particular month are directly computed, without consideration of inventory balances, using the formula "materials required for one unit times the number of units called for by the delivery schedule."
2. Inventory balances follow the requirements of the production schedule except in those cases where minimum purchase quantities are involved. Instead of maintaining balances at an arbitrary minimum, the balances are quantities required by the schedules, but procured in advance of time of need (if this is necessary because of undependable delivery).
3. Adjustments due to variations in rejection scrap are handled by adjusting unit raw materials requirements.
4. The quantity of each raw material to be procured each month, is production requirements for the next month less stock which will be available.

In this procedure, stock balances are adjusted automatically to reflect variations of the production schedule as well as abnormal procurement due to minimum purchase quantities. The only difference between this principle and the practice of procuring at one time the total requirements of material needed to satisfy the schedule is that deliveries are timed so that each month's requirements are scheduled to be recived only one month ahead of scheduled use.

Scheduling Procurement and Consumption

The bills of materials called for by C.M.P. contain the basic information for a simple method of predicting material consumption during future periods. If each item of such a bill of materials is extended (unit material weight) by the number of units to be produced during a given month, the raw material required for each part will result. If raw material requirements for parts are sorted by lead time and each raw material item, and then totaled, the result will be month-by-month requirements of each item of raw materials.

(Continued on Page 180)

EXHIBIT D

PRIME CONSUMER INC.
ANYTOWN, USA

To R. PRODUCT MANUFACTURING COMPANY
606 DOVER STREET
NEW YORK, NEW YORK

DATE 10 15 43

THIS SAME FORM CAN BE USED TO INFORM SUB-CONTRACTORS OR VENDORS WHAT THEIR LEVEL OF USE SHOULD BE.

PURCHASE ORDER DELIVERY RELEASE

PLEASE SHIP THE FOLLOWING PRODUCTS ON OR BEFORE THE 15TH OF EACH MONTH OF THE QUARTER COMMENCING WITH THE DATE SHOWN ABOVE.

PROJ PROG	PURCHASE ORDER NO.	RELEASE NUMBER	OUR PART NUMBER	PART NUMBER AND DESCRIPTION	UNIT MEASURE	1ST MONTH OF QUARTER	2ND MONTH OF QUARTER	3RD MONTH OF QUARTER	TOTAL	BALANCE TO BE RELEASED
N6	81412	19	14579	1287 PANEL BD	1	1305	1010	1035	3350	10450
N6	81412	19	14585	4636 SWITCH	1	650	675	700	2025	7235
N6	81412	19	19103	A818 SWITCH	1	45	60	75	180	350
N6	81412	19	31220	4106 SWITCH	1	410	400	380	1190	8500

6

Exhibit D—See Text on Page 186

EXHIBIT F

REQUISITION ANALSIS

SOURCE OR SUPPLIER
CONTROLLED MATERIALS SUPPLIER
MILL CITY, PENNA

PROCUREMENT QUARTER BEGINNING 4th Qtr 1942

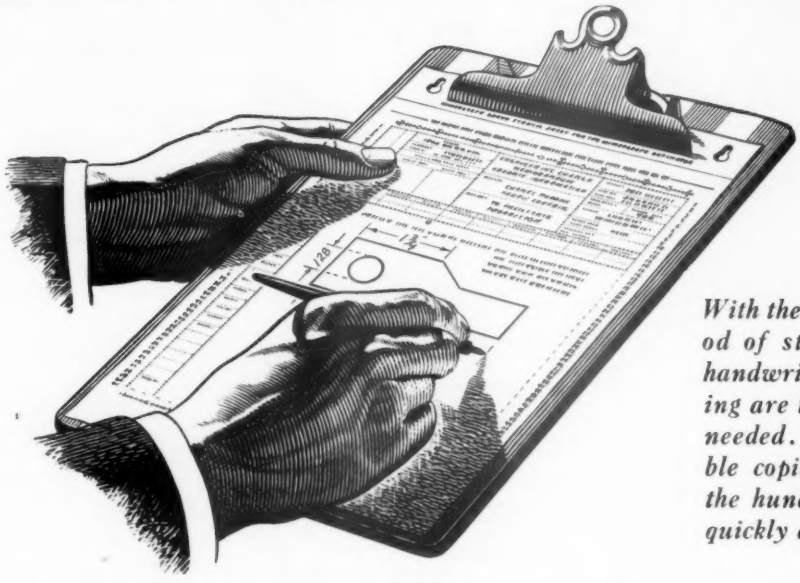
ORD PROG	RAW MATERIAL DESCRIPTION	RAW MATERIAL KIND/GRADE	RAW MATERIAL SPEC/ITEM	UNIT SOURCE OF M'RIAL	PURCHASE ORD. NO.	P.O. ITEM NO.	TO BE RELEASED QUANTITY	TO BE RELEASED WEIGHT	MINIMUM BUY QUANTITY	MINIMUM BUY WEIGHT
N61	5/1650 12FT HR BAR	101	2001010	1	AR1036	1			LESS THAN MINIMUM QUANTITY - BUY FOR 6TH MONTH	65 175
N62	X1 5/16 12FT HR BAR	101	7001010	1	AR1036	2	1.6 M 1.6 1.6	876 1254 1254	1	876 1254 1254
N62	X1 9/16 12 FT HR BAR	101	1401010	1	AR1036	3	1.6 M 1.6	687	1	687
N62	X258 10 12 FT HR BAR	101	2490R1020	1	AR1036	4	1.6 1.6			
N63	X1 1/2 15FT HR BAR	101	2610R1020	1	AR2117	1	1.6			

ASTERISK (*) INDICATES REQUIREMENTS ARE AVAILABLE. LESS THAN MINIMUM BUY QUANTITY (LESS THAN QUANTITY)

Exhibit F—See Text on Pages 187-188

The new easier method of producing

Engineering Change Notices



With the Mimeograph method of stencil duplication, handwriting and hand sketching are the only preparation needed... permanently legible copies are produced by the hundreds or thousands, quickly and easily!

Here's how it works out in actual cases

The engineering department of one of our leading aircraft industries found that Mimeograph duplication was the unique solution to the problem of speeding up and simplifying the production and distribution of vital engineering change notices.

The permanent form for the engineering change notice is die-impressed on Mimeograph brand stencil sheets. All the engineer has to do to change instructions or design is to handwrite and hand sketch with the stylus on the die-impressed Mimeograph stencil. The necessary number of copies is then produced on the Mimeograph duplicator *and within fifteen minutes the change is in effect!* Valuable man-hours are saved, production is speeded, costs are substantially reduced, chance of error is eliminated!

If you want to save man-hours by simplifying the method of handling your engineering change notices, write A. B. DICK COMPANY, Chicago, for samples and detailed information.

Engineers in leading aircraft industries and other manufacturing concerns all over the country have welcomed this advanced method of handling vital engineering change notices because of these outstanding advantages:

1. ***The ease of making the original copy***—as simple as writing with pencil
2. ***The speed*** with which this one handwriting can be given large distribution—in a matter of minutes a hundred or a thousand copies can be produced
3. ***The economy*** with which all necessary copies can be produced
4. ***The clear and permanent legibility*** of these black and white copies.

Mimeograph duplicator

MIMEOGRAPH is the trade-mark of A. B. Dick Company, Chicago, registered in the U. S. Patent Office.

The standard of speed and legibility in the one-writing system

EAGLE-A PAPERS

Eagle-A
CONTRACT

BOND • LEDGER • ONION SKIN

The Eagle-A Contract family group of 75% Rag Content Papers meets today's most exacting needs where durable papers are essential. Whether your business is entirely commercial or governmental — these high rag content business papers, produced by skilled craftsmen, will present a finer appearance and preserve important records.

EAGLE-A CONTRACT BOND
for letterheads — contracts — other business forms.

EAGLE-A CONTRACT RECORD
for ledger records — policies — legal documents.

EAGLE-A CONTRACT ONION SKIN
for contracts — airmail — legal forms — reports.

Specify these *whiter, cleaner,* more rugged business papers to your Printer, Lithographer or Engraver. The Bond and Onion Skin items can be purchased from leading stationers in boxed Typewriter sizes—both plain and ruled.

Facsimile Watermarks

EAGLE-A
CONTRACT BOND
RAG CONTENT U.S.A.

EAGLE-A
CONTRACT RECORD
RAG CONTENT U.S.A.

Eagle-A
Contract Onion Skin
RAG CONTENT U.S.A.

AMERICAN WRITING PAPER CORPORATION
HOLYOKE MASSACHUSETTS

Be sure to get this 64 page GUIDE to Essential Wartime Printing and Lithography. A copy sent free upon request.

(Continued from page 178)

By this procedure accurate predictions of material requirements must be followed by parallel procurement of material and the placing of this material into production. When such a method is put into effect, checking in inventory records with their day-by-day postings and calculations can be eliminated and instead a check is made to see that procurement and production proceed according to schedule. A considerable saving of time should result, since expediting can be directed to the behind-schedule materials, and when C.M.P. begins to work smoothly, raw materials should arrive on schedule.

To use this method the schedule must be realistic. It should have been tested, by experience or by other means, to determine that the facilities and man-power required will be available. Month-by-month planning of material requires that the material control department be notified of any deviation from month-by-month production of parts.

However, production lots can be the sum of one or more month's requirements of parts. Parts will then be available for assembly in accordance with the quantity called for by the delivery schedule, even though production may in some cases run ahead of schedule as to time, should this be necessary because of the impracticability of producing only a single month's requirements.

Automatic methods can also be employed to balance raw material stores each quarter with the requirements of production schedule, so that each quarter the excess is removed from the quantity necessary for a maximum allowable inventory. Variations are premissible and will occur due to minimum order quantities and variations between quantity ordered and quantity shipped.

Predictions Based on Delivery Schedule

To forecast requirements of product components, parts and raw materials for future months' needs, each bill of material items is multiplied by the quantity of products to be delivered. There are several ways of handling this computation. For instance, if a copy of the bill of materials is used, and extended by schedule quantities as indicated in Exhibit A, Delivery Schedule shown on page 177, the requirements for the month under review will result.

If bill of materials items are grouped according to lead months, all items within each group can be

(Continued on page 183)

AIN'T IT THE TRUTH

by Stern

THEY CAN'T GET A PRIORITY ON BILLING MACHINES
C'EST LA GUERRE!
BUT A TYPWRITER CAN'T POUND OUT ALL THE COPIES WE NEED!
WHY NOT FILL IN THE BILL FORMS ON TYPWRITERS?
AM I GLAD I DON'T HAVE FORM TROUBLE!
WITHOUT BILLING MACHINES WE CAN'T BILL AND WITHOUT BILLS WE CAN'T COLLECT!

Exaggerated? Of course, But it's true, Mr. Office Manager, that with the Old Town Dupli-Form an ordinary typewriter can do the work of a billing or manifolding machine — only better. You type the original and ***duplicate*** the copies — form and all. What's more, you'll have difficulty telling the hundredth copy from the first. Ask your Purchasing Agent to get you the facts on Old Town Dupli-Forms.

WHAT *Dupli-form* IS

Have any multiple copy form set up on an Old Town DUPLI-FORM. Your typist fills in the DUPLI-FORM . . . then runs off as many copies as you require on your fluid process duplicator.

WHAT *Dupli-form* DOES

No More Large Printing Bills! On a 25-copy form, 1000 DUPLI-FORMs will replace 25,000 printed forms!

No More Weak Copies! Whether you want a dozen copies or hundreds, DUPLI-FORM will give them to you . . . every one clean and distinct with photographic accuracy.

No More Special Machines! With DUPLI-FORM every typewriter becomes a billing or manifolding machine. Makes copies of pencil writing without register or special pencil.

No More Fear of Errors! Instead of having to correct every copy, just correct the original DUPLI-FORM.

No More Collating! Only the original DUPLI-FORM goes into your typewriter. No aggravation and waste of time to stuff forms with carbon paper and crowd into the typewriter.

No More Slipping! DUPLI-FORM guarantees precision registry . . . right down to the last line of the last copy. The form itself is duplicated along with typed-in-data.

SAVES PRINTING
SAVES TIME
SAVES MONEY

Old Town

RIBBON & CARBON CO. INC.

Foremost makers of ribbons and carbons for every use

750 PACIFIC STREET, BROOKLYN, NEW YORK, N. Y.

Note the CARBINE...

"...increases fire power 33%!"

"After 35 years, the Army goes from the pistol to the carbine . . . The Winchester carbine is rated high, and is judged to increase the fire power of the infantry regiment by 33 per cent."
As reported by a prominent news magazine

"All the men and officers in the infantry who have been armed with the pistol will carry the carbine instead . . . We believe it to be a weapon of great merit . . ."
ROBERT P. PATTERSON, *Under Secretary of War*

The same manufacturing ability that has made Underwood Elliott Fisher typewriters, adding and accounting machines famous throughout the world, is now being applied to the production of carbines.

TO OUR MILLIONS OF VALUED CUSTOMERS: *TYPEWRITERS*—New and used typewriters are sold only to the U. S. Government for the armed services. You may rent used machines under Office of Price Administration regulations.

ADDING AND ACCOUNTING MACHINES—New Machines are available under War Production Board regulations. We have been able to assist many of our customers with their accounting problems.

RIBBONS, CARBON PAPER, ETC.—We may sell ribbons, carbon paper and other supplies for all types of office machines without restriction.

MAINTENANCE—Our maintenance service is in complete and efficient operation from coast to coast to help you keep your Underwood, Elliott Fisher and Sundstrand machines operating efficiently and we are permitted to manufacture the necessary parts.

Carbines are now in mass production by

Underwood Elliott Fisher Company

Former and future makers of Typewriters, Adding and Accounting Machines

★*Enlist Your Dollars*
Buy More War Bonds
To Shorten The Duration

(Continued from page 180)

extended by related month's schedule quantity for that group. This will simplify the extension and the proof of extensions, since the sum of the item requirements of one unit of product times the scheduled delivery quantity, equals the sum of the individual extensions.

Where only one major program (claimant agency program) is being handled, the computations can be made on the stock record to predict requirements of future months as per schedules. If the materials records are arranged by kind of material, form, etc., the record will be in logical sequence to summarize some of the data required by C.M.P. for allotment purposes.

The value of a unit record for each bill of materials item is evident, since the arrangement of data for summarization changes several times throughout the routine. The use of punched cards permits the grouping of data in any way desired and assures accuracy of computation.

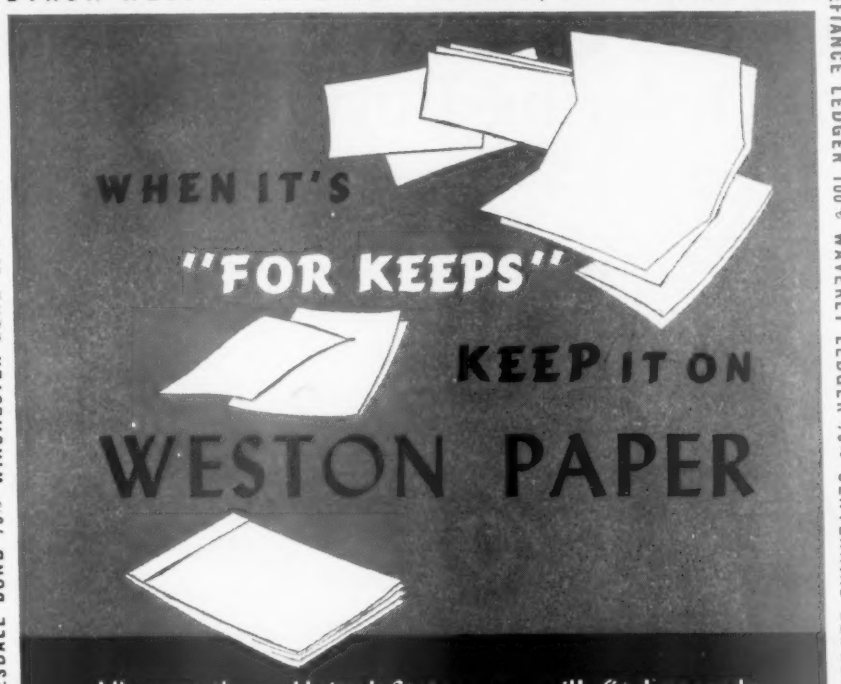
An Aid to Production Planning

In order to be of assistance to the C.M.P. program, a study has been made to determine what might be done to assist users of electric accounting machines in meeting the burden of the extra paper work necessary under these regulations and, at the same time, to present ideas which may be useful in synchronizing procurement and production with delivery schedule. The development of these suggestions has drawn upon the experience of mass production industries and upon experience with electric accounting procedures useful in planning production. The following description is not an attempt to outline a universally applicable plan but rather a collection of old and new ideas, organized to provide a useful method for formulating punched-card plans.

The basic records used are master files of punched cards, Exhibit C on Page 178, is an illustration of a combination card form designed for use as a master card representing a bill of materials item; as Scheduled Requirements" cards produced automatically by reproduction of the master file, to be further punched by automatic means to record each month's requirements; and as a material description card. Exhibit C is a master card, punched for a manufactured part. The alternate fields (columns 20-34 and 45-65) are used to record B-Product or Government Furnished Equipment, and their respective quan-

(Continued on page 184)

BYRON WESTON CO. LINEN RECORD, EXTRA NO. 1 100%
DEFIANCE LEDGER 100% WAVERLY LEDGER 75% CENTENNIAL LEDGER 75% WINCHESTER LEDGER 50% BLACKSTONE LEDGER 25% WESTON'S MACHINE POSTING LEDGER AND INDEX 50%
DEFIANCE INDEX 100% WINCHESTER INDEX 50% WESTON'S BOND EXTRA NO. 1 100% DEFIANCE BOND 100% HOLMESDALE BOND 75% WINCHESTER BOND 50% BLACKSTONE BOND 25%



WHEN IT'S
"FOR KEEPS"
KEEP IT ON
WESTON PAPER

All over these United States you will find records *made long before you were born* that remain as clear, strong and useful as the day they were written. Men in both public and private office had the good judgment and foresight to put valued records on WESTON paper.

Weston papers are made particularly and exclusively for this responsibility by expert craftsmen employing strong, durable cotton fibres. Surely *some* of your business records, documents, accounts and correspondence need the resistance to time and handling that is put into WESTON papers. For such records, establish this simple rule:

If It's Worth Keeping . . . Keep It On A WESTON Paper

BYRON WESTON COMPANY
Makers of High Grade Papers
DALTON, MASSACHUSETTS

WESTON'S PAPERS

EVERY WESTON PAPER IS A COTTON FIBRE CONTENT PAPER

When writing Byron Weston Co. please mention Purchasing

HILL Can Cut Your Cost of Ordering Business Cards

● Of course, a purchasing agent seeks the prestige of a Hill Business Card. But he is equally interested in the way Hill service saves time and money. For the cost of ordering cards is sometimes more than the cost of the cards, believe it or not! The Hill system, which we fit to your needs, cuts purchasing details, checking, follow up . . . it's error-proof. Same day shipments prevail on thermographed cards. When requested we ship direct to your men. You can avoid investment in a master stock. Another great economy: cards are packed in Economy Card Cases, 25 cards to the case, eliminating pocket soilage and waste and effecting savings up to 25%.

And as for distinguished craftsmanship, the roster of Hill patrons reads like the Blue Book of Big Business. You, too, will appreciate the extra values that have made Hill the largest producer of fine business cards. Whether card or letterhead, engraved or thermographed, we'll gladly advise, quote, send samples. Mail us your present setup, and mention annual quantities.

HILL CARDS WORK FOR VICTORY –
used by these and many other
ARMY-NAVY "E" WINNERS

●

E. I. du Pont de Nemours & Co. Inc
Eastman Kodak Company
Ford Motor Company
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General Motors Corporation
International Business Machines Corporation
International Harvester Company of America
Kraft Cheese Company
Monsanto Chemical Company
Otis Elevator Company
Republic Steel Corporation
Westinghouse Electric & Manufacturing Company

ROHHILL INCORPORATED NEW YORK

R·O·H·HILL INCORPORATED
270 LAFAYETTE STREET • NEW YORK, N. Y.
Telephone: CAnal 6-6340
Largest Makers of Fine Business Cards

(Continued from page 183)

tities instead of material weights.

The master file is divided into two sections, manufactured parts, classified 1-4 in Column 18, and B-Products or GFE, 5-6, in column 18. (See "component classification — page 7, War Accounting Service, Controlled Materials Plan bulletin). GE master cards differ from B-Products master cards in that the code for source (columns 36-39) indicates the government instead of a manufacturer.

This master file should remain in its original sequence at all times, subject to revision by engineering changes as they become effective. All subsequent operations to compute requirements can be handled by using "Scheduled Requirements" cards created automatically from this master punched-card bill of materials.

In creating a corresponding file of "Scheduled Requirements" cards, a slight variation in procedure is necessary for reproducing products and parts sections of the master file in order to obtain the maximum utility of the cards. Parts and products cards are reproduced in the same column sequence except for the following variations:

1. Columns 45-51 are reproduced from one of the three unit requirements fields, columns 45-65 of the master cards.
2. Columns 52-80 of the parts requirements cards are not reproduced from the master cards; but part name is reproduced into the B-Product requirements cards, columns 52-65.

A current punched card-bill of materials is now ready for use to compute requirements as called for by the delivery schedules. The first step is to sort these cards by lead-time in order to permit group-extension of each lead-time group by the quantity to be delivered in the related month. One set of group-multiplier cards (punched with the delivery quantity of each group's related month, (the month of allotment and the month of assembly) is placed ahead of each group, and scheduled requirements (B-Product quantity or raw material weight) is automatically calculated and punched by the multiplier in columns 75-80.

The same group-multiplier card in which the delivery schedule quantity is punched contains also both allotment month and assembly month. The cards are in proper sequence without further sorting, to gang-punch these indications into columns 66-69 of the

(Continued on page 186)

Dear Mr. Croswell: The passage of the tariff bill by the Senate, the speech of Mr. Calhoun's, and Mr. R. W. Emerson's essay on "Social Agitation," give us a budget of reading in the copy of the New-York Daily Tribune that has just come to hand. But in many ways, the paragraph that enlists my interest is the one concerning you and the celebration of your fiftieth year as postmaster at Catskill, in Greene County, New York, having been appointed to office by President Washington.

Our system of posts, instituted in the colonies by Benjamin Franklin and carried forward by our Federal Government, has been one of the great unifying forces in our national development. To you, whose service in this field covers the span from the very beginnings of our nationhood to the present moment of energetic westward expansion, we would offer our congratulations, and subscribe to the hope that you may continue to wear the title of the "oldest Postmaster in the Union," for years to come.

It is my fond hope that some day this enterprise that I established here at the turn of the century may bear a like title, that of the oldest maker of fine papers in America. We have sunk our roots deeply in the rewarding soil of quality and have employed nothing in the manufacture of our papers but the best of rags and the purest of water. Others may wander into fields of substitution and experimentation with other fibres, but it is my firm conviction that there will always be a need for papers of enduring character, and these my sons intend to make, as I have made them, joining their skill to better methods of manufacture as they may discover them or adapt them, when their worth is proved.

In this, I am sure I should gain your adherence, for one who has served his community and his country as long and well as you, must entertain this same regard for continuity of purpose. With my renewed respects and salutations, I am,

Truly yours,
ZENAS CRANE

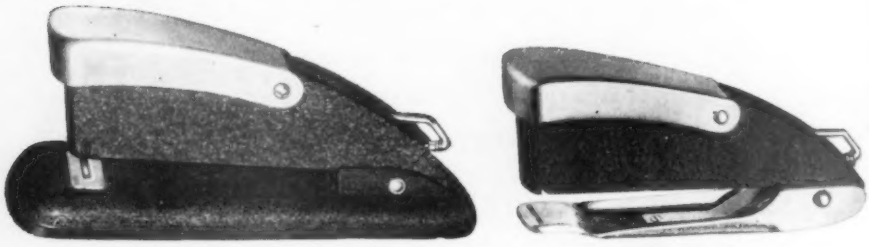
Dalton, Massachusetts
August 12, 1842

For 142 years Crane has been making paper of cotton and linen fibres only, employing the accumulated skill and experience of five generations in the conversion of these enduring materials into distinctive papers for letters, documents of importance and record, and tokens of value, such as the United States War Bonds you are now buying in the aid of your country and that all men may be free.

CRANE'S FINE PAPERS • MADE IN DALTON, MASSACHUSETTS • SINCE 1801
When writing Crane & Company please mention Purchasing

Is Your Company Saving Steel In Fastening Papers?

The larger your concern, the more it can help the war program by using tiny staples instead of other wire paper fastening devices which use over seven times as much steel. Also staples make each file drawer apparently several inches longer because filed papers fastened with staples lie closer together in the drawer.



MODEL S122A MODEL S122P

These two models No. S122A for desk use and S122P, a portable stapler are still available on priorities. They use inexpensive standard size staples and list for only $1.90 each.

Write today for attractive quantity prices.

STAR Paper FASTENER CO.
NORWALK, DEPT. P CONN.

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Papers
FOR YOUR
Forms
Records
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Superior Quality
MADE FROM COTTON FIBERS

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Ask your Printer for Samples of these fine grade Papers

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HOLYOKE · MASSACHUSETTS

HOTEL PHILADELPHIAN
FORMERLY HOTEL PENNSYLVANIA
DANIEL CRAWFORD, JR., Mgr.
39th and CHESTNUT STREETS
PHILADELPHIA, PENNSYLVANIA

Our courteous and competent staff will give you the utmost in friendliness, comfort and service. Conveniently located to all stations, and only five minutes away from the heart of the business section.

600 ROOMS
Each with bath from $3.00 up

RADIO IN EVERY ROOM

Lounge and Restaurants
Unrestricted Parking to 3 a.m.

(Continued from page 184)

requirements cards. It is at this point that procurement time is controlled. Conformance with C.M.P. Regulation No. 2 calls for a raw material inventory restricted to scheduled production requirements of the next 60 days. This means that if lead time is established so that material is procured during the month prior to the time it is placed in production, a 30-day supply will always be available if deliveries are scheduled for the first of the month and made as requested. To provide the maximum 30-day margin, the allotment month can be advanced one month if this was not taken into consideration in computing lead time. That is, the difference between the allotment month and the month of assembly can be the lead time plus one, if the date of delivery is the last of the month. In this way deliveries can be 30 days late without interference with the schedule, in which case there is only a 30-day period of grace instead of 60-day period as would be the case if deliveries were requested as of the first of the allotment month.

B-Product Delivery Releases

As soon as the production requirements computation has been completed, the scheduled requirements cards can be sorted with name cards for automatically writing Purchase Order Releases — Exhibit D, Page 178.

The type of inventory record useful to planned production must be one which reveals what the inventory position will be at the beginning of a future quarter. The very nature of raw-materials issue and procurement practices necessitates a method of adjusting production requirements in order to determine the quantities to be procured. Quantities ordered may be more than production requirements because of orders for minimum procurement quantities, variation between quantities ordered and quantities delivered, and because of an upward adjustment of production-requirements quantities to eliminate fractions of bars, etc. Usually these variations cause excessive inventory quantities which must be deducted from the quantities required for production in order to keep procurement within the limitations of C.M.P. Regulation No. 2.

The electric accounting machine record commonly used to show future stock position known as a "Stock Status" report. The principle of determining future stock position is to add to the current actual stock balance all quantities ordered but undelivered.

and to deduct all quantities reserved for future production in order to arrive at a future position which is generally described as "available" stock. Under C.M.P. the only variation from normal procedure is to place orders and make reservations quarter by quarter. The "Available Balance" as of the beginning of the next quarter is used to adjust production requirements when determining the quantities to be procured during that quarter.

If issues are properly controlled, it is not essential to separate raw material inventories physically by major programs, but allotment procedures become simpler if the book inventory record and procurements are kept separate. Production requirements can be computed automatically, but if more than one program is involved, manual splitting of minimum procurement and receipt quantities may be necessary. For this reason the description which follows assumes that both procurement and inventory records are according to major program. The procedure follows.

Requistion Analysis

Three types of cards are used, combined in the following order, in material code sequence:

1. A raw material description card which contains also a factor used to convert weight into the proper unit of measure used for procurement, receipts and issue, and the minimum procurement quantity and weight.
2. An available balance card (weight).
3. Scheduled requirements cards (weight).

The merged cards are placed in the Automatic Multiplier and group-extended to convert the weights into units of raw material (pieces, feet, etc.). Fractional quantities other than tenth are dropped. Both "available" and "required" weights are converted. The cards are next sorted to "source" behind vendor name cards, to tabulate the "Requisition Analysis Report" Exhibit F, (Page 178). If the purchase-order item number is available from the material description cards, the material items can easily be associated with purchase order item for writing delivery releases each quarter.

The Requisition Analysis Report, prepared on an Electric Accounting Machine, shows for each material item, for each month of the quarter under review, the quantity and weight of the item to be procured, cross-referencing this to the purchase order

(Continued on page 188)

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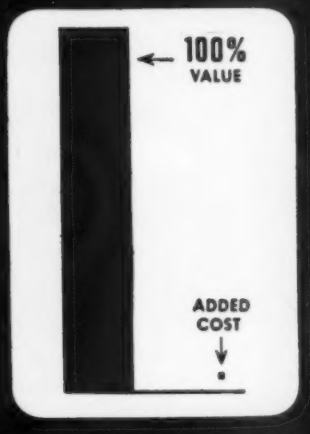
SO MUCH
FOR
SO LITTLE



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75% New Cotton Fibres
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50% New Cotton Fibres
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L. L. BROWN PAPER CO.
ADAMS, MASS.

(Continued from page 187)

if an order for the contract requirements has been placed. The amount to be procured is an automatically adjusted figure based upon production requirements There are a number of adjustments which may be necessary.

In all cases, any material which will be available must be progressively deducted from monthly production requirements quantities, until the available quantity has been absorbed. Also, the monthly procurement quantities may be consolidated until they equal or exceed the minimum procurement quantity. Should the total of all procurement quantities for the quarter be less than the minimum procurable quantity, the minimum must be the quantity procured.

Since the quantity of an item required for production may include a fraction of a unit, each month's procurement quantity must be increased to the next whole number.

Exhibit "F" on Page 178 is an illustration of a Requisition Analysis, showing how adjustment are made automatically.

The Materials Description cards can be separated from the requirements cards and placed ahead of manually-punched "purchase" cards as they are punched, for gang-punching all data but month, quantity and unit weigh. Cards punched for purchases and held in an open-order file in source order, can be completed by punching quantity and weight received to create "receipt" cards.

Production requirements cards or reproductions thereof, serve as raw-materials reservation cards. They can also be reproduced into raw materials requisition or "release" cards.

Allotments Requests and Records

Prime Consumer's requests for allotments can be obtained exactly from the "purchase" cards. However, it is quite likely that even if such an exact computation were made, upward revisions or "loading" would usually occur.

Revised C.M.P. Regulation No. 1, paragraph (e) sub-paragraph (2) indicates that requirements "substantially" overstated "by inadvertance or otherwise" are expected. To obtain data for the allotment request on the basis of actual production requirements might cause an insufficiency of allotment (due to procurement of minimum quantities) or an overstated request (due to presence of available quantities). Under the system proposed, these variations tend to equalize themselves. Therefore, consideration should be given to computation of the allotment request on the basis of a summarization of unit requirements of each project by allotment class and lead time, to which a small percentage is added.

By such a summary method very little effort is required to compute the request for an allotment, and in case the schedule is revised there will be no wasted effort in computing production requirements, making the Requisition Analysis, and manually punching "purchase" cards.

It is required that each consumer maintain a record of the allotments used. Since it is desirable to maintain the "purchase" cards in supplier sequence, these cards should be reproduced and the reproduced cards extended (quantity times unit weight) and used to tabulate an analysis of procurement by program number. Exhibit G, Page 190, shows a tabulation by major program by allotment class, by suppliers.

A similar analysis can be run from requirements card to check sub-contractors' requests for allotments.

(Continued on page 190)

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Towels

Check this fact . . . see how quickly and thoroughly a Straubel Texturized Towel will absorb water. Their high absorbency, extra strength, pleasant feel and freedom from lint make them ideal for factories, schools, offices, etc. Save time—save towels—protect public health—a vital contribution to victory. Ask your dealer, or write today for samples.

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DON'T TAKE our word alone for the fact that Rising papers will give your business letters the presence and authority they deserve.

Get your printer's impartial opinion. He knows how important it is to use the finest quality paper to get the finest printing results. That is why for years we have been supplying these same experts with papers for letterheads as well as many other specialty uses.

You will find you pay no more for Rising quality. Three grades: Rising Bond (25% rag), Rising Line Marque (25% rag), Finance Bond (50% rag), Rising Parchment (100% rag). Prices on a par with other quality papers. The Rising Paper Company, Housatonic, Mass.

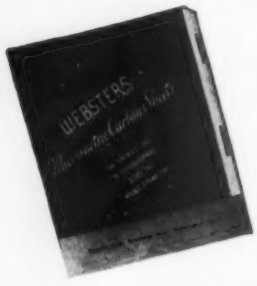
Rising Papers

ASK YOUR PRINTER—HE KNOWS PAPER

When writing The Rising Paper Company please mention Purchasing

Your Carbon Paper and Typewriter Ribbon

BUYING GUIDE



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Star Brand Typewriter Ribbons are built to wear. They give sharp, neat impressions. Webster service provides you with ribbons tailor-made to fit the various makes and kinds of typewriters used in your office.

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7 Amherst St., Cambridge, Mass.

CARBON PAPERS and TYPEWRITER RIBBONS

Factory branches in New York, Philadelphia, Chicago, Pittsburgh, and San Francisco

(Continued from page 188)

Operations under CM.P. are likely to be difficult if some method is not devised to control the issue of material as well as the procurement, if more than one project is involved, since an over- issue for one project will cause a material shortage on another. The quantity of material consumed should agree with scheduled requirements. The requirements cards can be used to create requisitions automatically, by reproducing project, month, quantity, weight, etc. Such requisitions would represent authority to use or issue material.

Exhibit "G"
See Text Page 188

"Allotments Requests and Records"

EXHIBIT G

CMP ANALYSIS
OF
ALLOTMENTS & ORDERS RELEASED

QUARTER ENDING March 31

ALLOT PROG	SOURCE SUPPLIER	ALLOTMENT NUMBER	MATERIAL CLASS	WHT RELEASED 1ST MONTH	WHT RELEASED 2ND MONTH	WHT RELEASED 3RD MONTH	TOTAL WHT RELEASED	ALLOTMENT AND BALANCE
N6	N6	10315	62000					2000
N6	52	10418	72000					2000
N6	52	20049	12000					1800
								6800 *
N6	10		2000	1080	1410	1340	3830	
N6	12		2000	450	610	620	1680	
N6	15		2000	1560	1720	1800	5080	
N6	18		2000	1425.8	1526.0	1515.20	4858	
N6	20		2000	856	904	936	2616	
N6	23		2000	1030	1090	1120	3240	
N6	26		2000	509	661	670	1896	
N6	41		2000	867	930	810	2597	
N6	56		2000	510	300	320	930	
				20920	22864	22904	66671 *	1329 *
N6	N6	10315	62000					1000
N6	52	10418	72000					8000
N6	52	20049	12000					1800
								21000 *

Inasmuch as the totals for column 9 can be obtained readily by cross-footing of item totals already present, manual computation is indicated.

Inasmuch as the different procedures described in the foregoing are based on electric accounting machine cards punched with all the basic elements of the transaction involved it will be comparatively simple to adapt them to almost any change in C.M.P. regulations which may be forthcoming.

In case such changes are of a nature as to make adaptation more involved, the Logistics Department will issue supplements describing ways and means to cope with the new regulations.

Form C.M.P.-7

Section B of Form C.M.P.-7 requests information concerning inventory movements and balances by classes of critical materials. The data may be obtained by summarizing four types of cards—Stock Status Balance Cards; Analysis of Allotments and Orders Released summary cards; Requisition Analysis summary cards; and reproductions of any purchase release ("on order") cards remaining in the file at the time the Stock Staus Summary report is prepared.

Columns 4, 5 and 6 of Section B can be obtained by further summarization of Stock Status Balance cards. Column 4 will be the last quarters "issues". Column 5 will be totals of "in stock" balances not assigned to a project, and column 6 the balances assigned to projects

Columns 7, 8 and 9 call for totals which may be obtained easily. At present column 7 totals may be summarized from summary cards punched during the preparation of "C.M.P. Analysis of Allotments and Orders Released" together with the reproduction of "on order" cards which were used in the "Summary Stock Status" report. "On order" cards are those cards punched for orders released which remain in the open file to represent items not yet delivered. Column 8 should be obtained from an analysis of summary cards punched for each C.M.P. class during the preparation of the "Requisition Analysis" report.

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• When you personally try this better towel you will quickly appreciate its many outstanding advantages. Fast absorption—thorough drying—no lint left on the skin, these qualities, plus its extra strength and comfortable "feel", are certain to win your approval. Ask your supplier for Straubel Texturized Towels or write us for free testing samples today!

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PACKS A FEARFUL PUNCH

To be sure-footed as a cat with the "sea-legs" of a foremast hand . . . with the eyes of an owl, the digestion of an ostrich for taking plain fare and still keeping metabolism perfect . . . to be as able to resist burning sun and icy spray as the Storm-Petrel—that in brief is your picked PT boatman.

Obviously not every smart and husky man-jack will do. PT crews must be hand picked by every scientific test known to medicine and psychology.

Adirondack Bond is selected by printers because it's a water-marked 100% sulphite bond paper that can take it printed, typed, or written.

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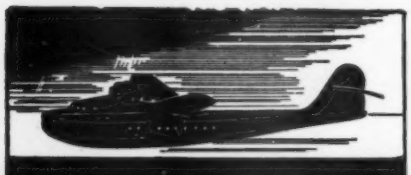

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COMMODITY DATA FILE

File of Tradepaper Advertisements and Articles Giving Facts on New Products and New Ideas Proves to be a "Life-Saver"

by H. E. GEORGE

In the office of John Fleming, Purchasing Agent, Capital Transit Company, Washington, D. C., there is a segregated series of four-drawer file cases—three of them. Mr. Fleming terms this his "Commodity Data File". Some of his brother purchasing agents like to "kid" him about it he says, for to some it is just a growing accumulation of scrap paper born of the old-fashioned habit of saving things that might be of value sometime. However, it is just the reverse of being fogyish or old-fashioned, for it is a file akin to

John Fleming, Purchasing Agent, Capital Transit Company, Washington, D. C.

that maintained by capable writers, publicists and research men, advertising men and others who want to keep abreast of the new thought that is constantly developing in this rapidly changing world and who need a supply of reliable data, or a source therefor, on new subjects not yet in the encyclopedias, reference books and general text books.

This file of John Fleming's is what might be termed an ordinary clipping file—clippings telling of the new developments in railway supplies and equipment. Over a period of years it has evolved into virtual compendium of names of products and manufacturers, and new ideas included in news items, special articles and advertisements clipped from PURCHASING and other business papers that he subscribes to, particularly those in the transit field.

It is not to be intimated that Mr. Fleming takes each issue of these publications apart and promiscuously shunts the material into file envelopes. What he does do is go over each issue, separate the reading matter from the advertising matter, and after scanning the sheets, he places in the file "all the information of interest that we feel might come up some time".

As is obvious, a transportation company such as the Capital Transit Company is constantly in the market for a large variety of products, from frogs and rail joints to tickets and tokens and the multitude of other things that have a part in municipal transportation. Accordingly, the three cases have become pretty well filled with advertisements and clipped articles, all filed according to subject matter in folders. This file is supplementary to a general catalog file whose varied assortment of bulky and odd size books, brochures and so on precludes the inclusion of magazine clippings.

Mr. Fleming will tell you that his clipping file has many times proved a life-saver and a time-saver. More than that, he states that it paves the way for him to help keep his regular suppliers in line, so to speak. And he will also tell you that he has found his file of greater value than many of the trade directories, for the reason that the articles and advertisements usually give him the specific information that he wants about a particular product or material.

The file has proved invaluable from other angles. Mr. Fleming points out that old sources of supply are often unable to furnish a certain product, as happens quite frequently now. A check through the envelope of clippings on the product or material wanted "usually brings to light the names of other companies who have the material in question, and thus we establish new sources of supply", he says.

Likewise it has helped him to locate substitute materials for wartime critical materials now difficult to obtain for ordinary uses. For example, the suppliers of sheet steel are numerous but steel is now unavailable except for war uses and necessary civilian uses. In like manner the suppliers of materials that might substitute for sheet steel in many uses are also numerous. Mr. Fleming wanted several hundred pieces of sheet metal for a certain use and in the knowledge that it was unobtainable for the use in view, decided to try some of the non-metallic sheet material available. Instead of 'phoning and writing numerous letters, he took out of the Commodity Data File the folder on sheet materials, where he found data on plastic impregnated boards which gave him immediately wanted information as to the nature of the material, its qualities and potential uses, and the name and address of the maker. Procuring samples he found that the substitute would admirably fill the need for which it was wanted; in fact, he says it has proved just as satisfactory for the use intended as the steel sheets formerly used.

"With a system of this sort", explains Mr. Fleming, "you do not have to hunt all over the place. Superficially it would seem that the clipping and filing of this material as it develops is wasted energy, but I have found that the little time now used in preserving the information on new

SCAN THE WHOLE HORIZON

Official U. S. Navy Photo

— and you'll find no greater carbon paper performance in wartime or any time than you can get from long-wearing, sharp writing PINNACLE. You'll discover how superb materials and outstanding craftsmanship are combined to give at least 70 to 80 crisp writings out of every sheet of Pinnacle Carbon Paper.

An extra half inch in sheet length adds even longer life and uniform wear-down. You simply reverse the sheet. The top becomes the bottom and the extra half inch causes the new typing to strike on fresh carbon paper *between* the old impresisons. This also provides speedy, soil-proof "QUICK EXTRACTION" of the carbon paper from the shorter original and carbon copies.

Ask your dealer for test samples of Pinnacle quality Carbon Paper so you can check on its low-cost performance. Or contact the Columbia Office nearest you.

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227 South LaSalle Street, Chicago, Ill.
155 West Congress Street, Detroit, Mich.
227 East Michigan Street, Milwaukee, Wis.
200 Plymouth Building, Minneapolis, Minn.
107 Union Street, Nashville, Tenn.
1508 Fox Building, Philadelphia, Pa.
208 Standard Life Building, Pittsburgh, Pa.
205 East 6th Street, Cincinnati, Ohio
(Harris-Moers Company)
Also: London, England; Sidney, Australia

materials and manufacturers of things we are interested in, saves a heck of a lot of time later on—and it has proved invaluable in emergency cases.

"We are constantly being called upon by various departments for new things. Ordinarily it would take a lot of digging and research, telephoning and letter-writing to find what they want, but this file has "saved the day for us in hundreds of cases".

"We want more than just a company name and what it makes. We are interested in knowing what a particular product is, what it will do, and other facts. As a rule lists of manufacturers' names even when they include a general line of production, do not give us the information we want, and we find upon writing letters of inquiry to these people that in many instances they do not have what we want. This file gives us the exact facts as to where we can get what we want.

"There isn't a day that we don't refer to it. In selecting material for the file, we go over many pages of advertising matter before making selection, and the reading of the articles brings us new ideas. All of this is especially important in these days of substitutes and shortages."

* * *

CURTAILMENT OF PAPER PRODUCTION HELD IN ABEYANCE

There will be no further curtailments in the use of print paper in newspapers, magazines, books, and commercial printing at least until after July 1, according to announcement by the War Production Board.

This situation is made possible by confirmation by Canadian authorities of their undertaking to furnish for shipment to the United States 1,170,000 tons of woodpulp plus an additional 107,000 tons which the Canadian government will call upon its pulp and paper industry to supply within the next few months. This woodpulp is in addition to shipments to newsprint from Canada.

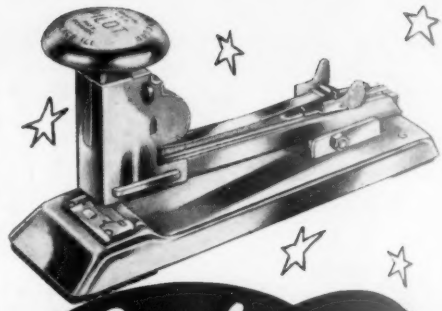
R. L. Weldon, Canadian newsprint administrator, advised WPB that an unexpected amount of wood had been cut during the winter in Canada. Accordingly the Printing and Publishing Divsion of WPB announced that the proposed second curtailment in the use of newsprint of not to exceed 10 per cent, effective April 1, would be held in abeyance.

It was pointed out that the supply of pulp wood is subject to unpredictable changes and therefore the two administrations have arranged to watch this whole situation closely and to make the matter the subject of a further review toward the end of April.

* * *

NOW CHAIRMAN OF WPB TR COMMITTEE

William Judson, on leave from the Northern Pacific Railway, has been appointed chairman of the newly-created WPB Transportation Requirements Committee. He will remain Director of the Public Services Division of the Program Bureau.



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Ace Stapling Equipment is now called upon to do double duty. In war plants, factories, offices, Government Departments, drafting, shipping, receiving rooms and countless other places, where papers, documents, bags and various materials must be quickly and efficiently handled, Ace Staplers are contributing their bit in furthering the war effort. Those who now have these modern, time-saving, efficient machines appreciate, as never before, the satisfactory service they render.

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An unexcelled, fast-acting sodering solution for electrical work. Just the thing where a "rinse" can be used after the sodering operation. Ideal, too, for automatic sodering — speeds up operation as much as 500 percent.

Formula NC-7 is but one in a large family of Allen Fluxes designed for *every* industrial need. Why not send for a sample today?

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Since 1880

Now when every minute counts, the men who cut metal are finding GRIFFIN BLADES the answer for results. Their consistently uniform performance has made GRIFFIN the "buy word" among mechanics who appreciate dependability.

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WARN AGAINST HARMFUL ANTI-FREEZE SOLUTIONS

Simple tests have been devised by the U. S. Bureau of Standards at the request of the Office of Defense Transportation to help truck and automobile owners determine whether the anti-freeze solutions in their vehicles are safe, the ODT announces, as reports continued that harmful anti-freeze mixtures containing inorganic salts and petroleum distillates are still being used.

Any owner who is not sure what kind of anti-freeze solution is in the radiator of his car or truck should make these tests at once, the ODT declared. If the tests show the presence of either salt or distilled oils, radiators should be drained, flushed and refilled with reliable anti-freeze solutions.

Safe anti-freeze mixtures are permanent solutions containing ethylene glycol and the more common semi-permanent types containing methyl or ethyl alcohol.

Motorists and truck operators are advised to use only those products plainly marked as having alcohol bases.

Unless car and truck operators are sure they are using safe mixtures, the should make the following two tests in the order given:

For distilled oils:

Draw a small amount of mixture from the radiator and add to a glass of water. If the radiator mixture floats noticeably on the water, the anti-freeze contains injurious kerosene, fuel oil or naphtha.

For harmful salt solutions:

Drain a cupful of radiator mixture into a clean tin can, and boil until all liquid has evaporated. If a substantial white or crystalline coating remains, the solution contains salt.

The fact that many motorists leave anti-freeze mixtures in their cars during the summer makes it doubly important that only a safe anti-freeze be used, ODT officials pointed out.

Many motors have been damaged, some of them beyond repair, by harmful salty or oily anti-freeze mixtures, ODT officials said. Although manufacture of such solutions is now prohibited, consumers were warned that some brands are still in circulation.

"CONVERSION" BECOMING POSSIBILITY IN MACHINE TOOL INDUSTRY

The machine tool industry has already completed the major portion of its job of re-tooling America for war, and before the year is over will be looking for more work to do says *Machine Tools*, official organ of the industry. This conclusion is based upon the record of performance to date and estimates as to future war requirements.

Production figures for the last five years are as follows:

1938	$ 145,000,000
1939	200,000,000
1940	440,000,000
1941	775,000,000
1942	1,320,000,000

Practically every weapon, every type of war equipment, requires machine tools

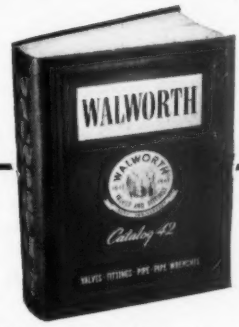
(Continued on page 196)

FIT THE VALVE TO THE SERVICE

WHERE THROTTLING IS NOT REQUIRED
Walworth No. 95 Re-New-Disc Bronze Globe Valve saves time and trouble in changing discs because of the lock-on, slip-off disc holder originated by Walworth. It's an ideal globe valve for use where throttling is not required. General purpose discs are regularly furnished, and special discs are available for unusual services.
WHERE THROTTLING IS REQUIRED
Walworth No. 245P, with its hard plug type disc and seat, is designed for throttling service. It resists "wire drawing" and lasts longer. Like the No. 95, extra strength in the body-to-bonnet connection is obtained by the union bonnet design.
MADE IN U.S.A. WALWORTH RE-NEW-DISC
MADE IN U.S.A. WALWORTH

Walworth No. 95 and Walworth No. 245P are two excellent valves for general service. They are well designed, made to precision standards, and proved in the services for which they are recommended. They are engineered for specific purposes . . . No. 95 for general service, No. 245P for throttling service . . . and each has its distinctive features of design and construction. *Fit the valve to the service.*

BOSTON AND KEWANEE PLANTS



To help you "fit the valve to the service," you'll find pertinent information on Walworth's *complete line* of valves, fittings, pipe, and pipe wrenches in the new Walworth Catalog 42. Included are 78 pages of practical engineering data that simplify valve selection and make piping layouts easier. Write, on business stationery, for your free copy.

WALWORTH

WALWORTH COMPANY
60 EAST 42nd STREET, NEW YORK

VALVES FITTINGS and TOOLS
Backed by 101 Years' Service

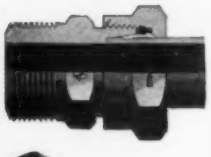
DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

When writing Walworth Company please mention Purchasing

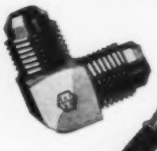
with WEATHERHEAD

FITTINGS AND HOSE

Weatherhead fittings and hose assemblies are engineered to meet the war-time demand for speed—for simplicity of installation—and satisfaction in performance.



ERMETO SAFETY FITTINGS—A modern method of connecting tubing that eliminates flaring, threading, welding or soldering. Suitable for any type of metal tubing, and since thin walled tubing may be used, reduces the amount of material required. *Ermeto Fittings hold up beyond the burst strength of the tube itself* and withstand excessive vibration without leakage of the joint.



BRASS TUBE FITTINGS—Quality tube service parts for small diameter tubing—a complete range of fittings in patented inverted, S. A. E., and compression types.

FLEXIBLE HOSE ASSEMBLIES AND FITTINGS—Non-metallic flexible hose for automotive, aviation and machine uses. Oil-proof and gasoline-proof. Weatherhead complete hose assemblies with fittings attached are quickly and easily installed for high pressure fuel, gas, air and hydraulic application.

We also manufacture low pressure hose which is finished in any length with necessary fittings.

PACKLESS VALVES—An advanced product of Weatherhead engineering, these valves have only four working parts. Tested through 100,000 on and off cycles, Weatherhead packless valves are leak-proof, quick acting and extremely rugged in construction. Compact design, trim appearance, and low overall height provide attractiveness of installation.

Tell us the Weatherhead products in which you are interested and we'll send complete details.

THE WEATHERHEAD CO. · CLEVELAND, OHIO

WEATHERHEAD

TUBE FITTINGS · FLEXIBLE HOSE · VALVES · DRAIN COCKS
AVIATION, AUTOMOTIVE AND REFRIGERATION SPECIALTIES

(Continued from page 194)

for its manufacture—and for the last *three* years the industry's entire output has gone for this purpose. Especially significant are the 1940 and 1941 figures. Most of the weapons with which we are fighting the war today were made on machine tools built *before* Pearl Harbor.

The 1942 production total reflects the impetus given the nation's production program by the actual outbreak of war. Upon the machine tools made in 1942 are being built the weapons and the equipment designed to overwhelm the Axis in 1943.

The industry's backlog of unfilled orders, as of today, represents seven to eight months' output; but with most of the nation's war plants now equipped, machine tool orders are showing a decline from the 1942 rate.

While the demand for machine tools will remain heavy throughout the war—machine tools for new projects, for aid to our Allies, for replacement of worn-out machines, and to meet changes in design—some companies will find demand falling below capacity.

This means that "conversion" is now for the first time becoming a possibility in the machine tool industry.

A part of these expanded facilities now may shortly be available for the making of products other than machine tools.

Machine tool plant facilities consist chiefly of machine tools of the very types used for the manufacture of parts for guns, airplane engines, tanks and other items of war materiél, requiring precision work.

With such plant changes and new equipment as might be necessary, it would therefore not be difficult in most cases to "convert" a portion of a machine tool plant to some other type of war work—still using the major portion of the facilities of that plant for the building of machine tools.

Such use of any slack that may develop in machine tool plant capacity offers three advantages—it would make use of existing facilities, it would use men already trained, and it would save time.

AUTO DEALERS USE SHOPS FOR WAR WORK

More than 72% of America's 36,000 automobile dealers expect to stay in business for the duration, according to Joseph W. Frazer, president of Willys-Overland Motors, Toledo, who estimated that the mortality rate among the auto retailers during the past year, based on reports from 48 states, has been slightly more than 10%. The survey showed that many dealers have turned idle lathes and other machine tools in their shops to war work. A dealer in Connecticut who formerly employed 30 workers, now has 50 additional people engaged in the production of precision tools, gauges and parts for aircraft, tanks, guns, shells and other armament. Of the 28% who may not survive the war, less than 8% definitely plan to close their doors before hostilities cease, he said. The other 20% are merely doubtful of their ability to continue in business.

Now...MILLER offers new Reflectors of MASONITE with exclusive IVANITE finish!

We wanted the sturdiest, most durable non-metallic reflector we could get for the MILLER 50 FOOT CANDLER and 100 FOOT CANDLER.

After testing many materials, we selected Masonite Reflector Board. It was developed especially for use as a reflector and provides the qualities of strength and permanency that Miller Products always have. Next, we treated it with IVANITE, an exclusive finish developed right here in our own plant. The result? A rugged, light-weight, easy-to-handle reflector with a durable high reflection factor . . . plus conspicuous savings of precious steel for Uncle Sam.

That's typical of the mechanical ingenuity behind the MILLER Continuous Wireway Fluorescent Lighting System. It's the kind of engineering that provides such proven user-benefits as *low installation cost, daylight efficiency, easy maintenance, complete mobility.* (Check column at right.) And it makes MILLER 50 FOOT CANDLER or 100 FOOT CANDLER your ideal lighting system for today's war needs, tomorrow's shift to new products or changed plant layout.

Your nearby MILLER field engineer can discuss these good things in terms of your specific business. Call him in today, or write us direct.

CHECK THESE MILLER FLUORESCENT FEATURES

INSTALLATION SAVINGS—MILLER'S CONTINUOUS WIREWAY contains all wiring and necessary auxiliaries—MILLER'S flanged top channel permits clamp strap attachment at any point for quick mounting or hanging to any type superstructure.

DAYLIGHT EFFICIENCY—Adequate, productive, modern lighting for your specific plant needs, evenly distributed to every working surface.

EASY MAINTENANCE—new durable, light-weight reflectors of MASONITE Reflector Board with exclusive IVANITE finish are easy to handle and keep clean—demount simply and quickly, can even be handled by women workers.

COMPLETE MOBILITY—entire rows of units are easily moved—units in rows can be cut out readily.

THE MILLER COMPANY · MERIDEN, CONNECTICUT

ILLUMINATING DIVISION
Fluorescent, Incandescent
Mercury Lighting Equipment

OIL GOODS DIVISION
Domestic Oil Burners
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ROLLING MILL DIVISION
Phosphor Bronze and Brass
in Sheets, Strips and Rolls

WAR CONTRACTS DIVISION
War Materiel

MILLER
SINCE 1844

When writing The Miller Company please mention Purchasing

Mass Production of Hose Clamps Speeded With

WITTEK
Automatic
ROLL FEEDS
FOR PUNCH PRESSES

Wittek Automatic Roll Feeds and Reel Stands are designed to fit all makes and sizes of punch presses and made in various types for every requirement in the automatic feeding of coiled strip stock.

In the all-out war production of Wittek Hose Clamps for aircraft, tanks, jeeps, trucks, and engines, the making of stampings from coiled strip stock is a major operation. To attain this mass production schedule, speed, accuracy and efficiency in feeding the metal to punch presses were essential. Wittek pioneered and developed the Wittek Automatic Roll Feed for that purpose. It has been proven on Wittek's and many other production lines, as the most important contributing factor for maintaining those present high production levels. Wittek Automatic Roll Feeds and Reel Stands are made available to other manufacturers who fabricate parts from coiled stock and demand speed and efficiency in their punch press operation. Write for catalog, prices and specifications.

Wittek Hose Clamps, for over twenty years identified with the Automotive and Aviation industries, are noted for their permanent leakproof hose connections. For original equipment and replacement.

WITTEK MANUFACTURING CO.
4305-15 W. 24th Pl., Chicago

Wartime Packaging Conference in April

Purchasing Agent of Hood Rubber Company to Discuss Packaging Materials Situation

A review of wartime packaging experience and discussion of what further packaging changes must be made to meet the demands of war, will be the principal points of inquiry at the 14th Annual Packaging Conference, which is to be held April 13-16 at the Hotel Astor, New York, under the auspices of the American Management Association. The conference will be held in conjunction with the 13th Annual Packaging Exposition which is also sponsored by the association.

It is pointed out that goods in American containers have been subjected to all the climates of the earth and to all conditions brought by modern warfare, and the conference will constitute an analysis of lessons learned and mistakes made, and the steps that must be taken for war products protection, and changes in packaging for civilian needs.

Joseph Givner, executive vice president of Real Silk Hosiery Mills, Inc., and vice president of the American Management Association's Packaging Division will open the conference with a talk on "War has Brought Packaging Down to Earth." He will be followed by Charles Sheldon, Purchasing Agent, Hood Rubber Company, Watertown, Mass., and former chief of the Container Division of the War Production Board, on "What is the Packaging Materials Situation Today?" Other speakers are A. W. Luhrs, Chairman, Container Coordinating Committee, War Production Board; Eldo Tomiska, Deputy Chief, Containers Division; Andrew Lobel, Office of Lend Lease Administration, and Philip Kennedy, Container Division, U. S. Navy. Charles Southwick will discuss "Technical Developments in Moisture Proofing and Protection." It is expected that speakers from the Quartermasters Corps, the Medical Corps, the Services of Supply and the Dept. of Agriculture will participate." (See article on "How to Prevent Rust Damage to Overseas Shipments", Pages 88 & 89.)

Free Educational Material Aims to Increase Production Efficiency

A unique contribution to American War industry is being made by the Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y., in the form of a free poster service addressed particularly to workers in "bits and parts" industries. The theme of the posters stresses to workers their responsibilities in the war program, even though their individual achievements are not as spectacular as those of workers who help produce planes, tanks and guns. The illustrations show battle scenes with some piece of military equipment blanked out of the picture. Copy points out the tragic consequences of the failure of even the smallest part of the equipment or the failure of it to have reached the assembly line on time. In the blanked out area of the illustration, the number of parts in the missing equipment is indicated. Executives are invited to request the poster service.

Cutter Gage: Severance Tool Industires, Saginaw, Mich., recently brought out a comprehensive "Midget" cutter gauge. Printed on heavy cardboard in two colors this attractive die cut piece should prove invaluable to Purchasing and departmental heads, as well as receiving and shipping departments and tool crib clerks. The piece provides accurate measurements for tool diameters, radii, number of teeth per inch, angles of cutter teeth, decimal equivalents, recommended operating speeds for Midget milling cutters and other informative information.

Crane Signals: Wall chart, 24" x 36", offered by the Wright Manufacturing Division of the American Chain & Cable Co., Bridgeport, Conn., graphically illustrates standard crane signals. It is suggested that as a safety measure, plant foremen should have a brush-up practice on signals.

Tool Breakage: The Genesee Tool Company, Fenton, Mich., is distributing the second of its series of factory posters on tool breakage to users of "Tomahawk" cutting tools. With the heading "Are You Keeping Him Waiting", it shows a U. S. Soldier in a Japanese prison. A smaller picture illustrates one of the more frequent causes of tool breakage, with the caption—"When you ruin a tool you may postpone the day of deliverance for the boys of Bataan. There is only so much tool steel available."

Pipe Welding: "The Welding of Piping" is a practical treatise of 16-page well-illustrated pages, consisting of a series of articles prepared by the Air Reduction Company's engineering Department. It covers various types of ferrous and non-ferrous piping, their dimensions, fabrication, and estimates of welding and labor costs. Copies may be obtained by addressing the company at 60 E. 42nd St., New York.

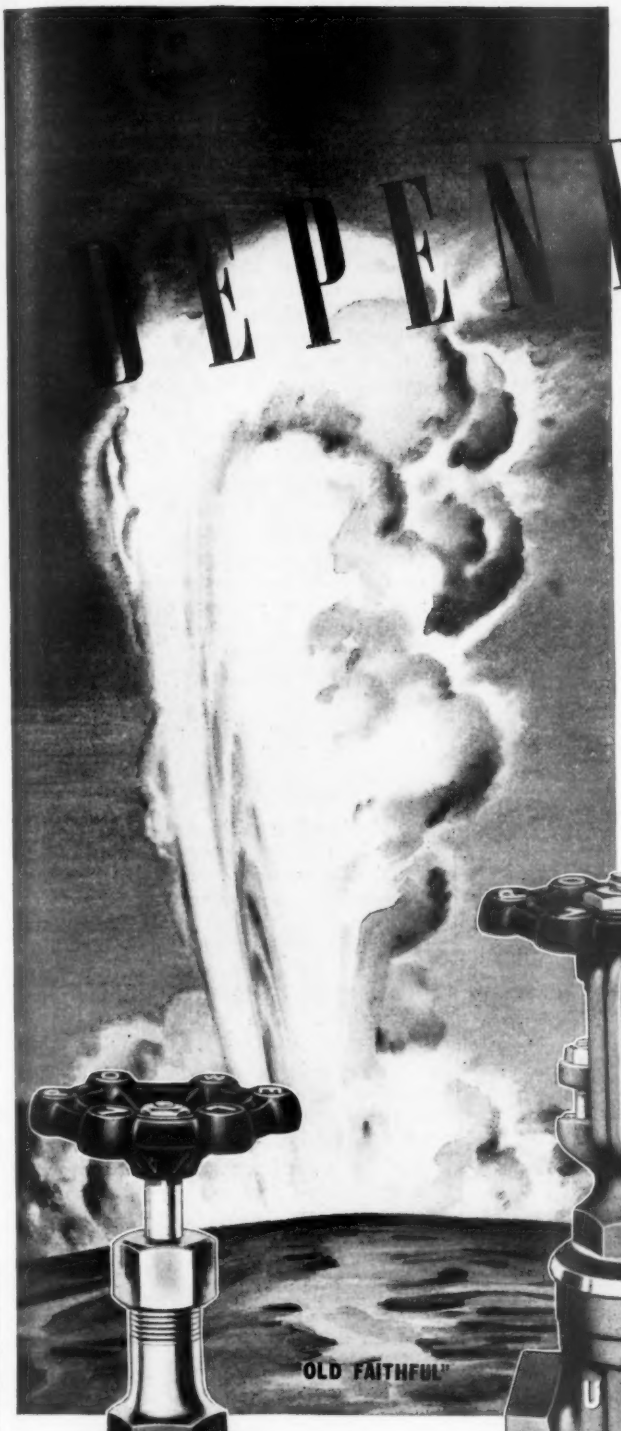
Flame Adjustment: Oxyacetylene flame adjustment color chart being distributed by the Air Reduction Co., 60 E. 42nd St., New York, shows color photographs of five fundamental flame adjustments. It conveys the proper appearance of the various welding flames faster and more accurately than any amout of descriptive instruction.

Carbide Tools: As a result of the demand for sound training of carbide supervisors for industrial plants, the Carboloy Co., Inc., Detroit, Mich., has made available a 12-page booklet, No. Gt-155, on its factory-operated training course. The course covers the fundamentals involved in the design and application of carbide tools, including also brazing, grinding and tool handling practice.

Rubber Parts: "How to Lengthen the Life of Mechanical Rubber Goods" is the

(Continued on page 200)

DEPENDABILITY



For many years "Old Faithful" has been a byword for dependable performance. Once every hour, day in and day out, as far back as man can remember, this famous geyser in Yellowstone Park has spouted for four minutes. In this brief time ten to twelve thousand gallons of water rush forth, the column rising to an average height of 140 feet. Then the flow ceases abruptly, to reoccur an hour later.

Powell Valves, too, are famous for dependability in flow control. Through nearly a century, under ever-increasing pressures and temperatures, Powell Valves have been a byword for dependable performance in every phase of American Industry.

The Wm. Powell Company

Dependable Valves Since 1846

Cincinnati, Ohio

Fig. 1186 (Left)
125-pound Bronze Gate Valve with screwed ends, outside screw rising stem, screwed in yoke bonnet bolted flanged packing gland, and renewable taper wedge solid disc. Sizes ¾" to 3", inclusive.

Fig. 375 (Right)
200-pound Bronze Gate Valve with screwed ends, union bonnet, inside screw rising stem and special hard bronze disc. Sizes ¼" to 3", incl.

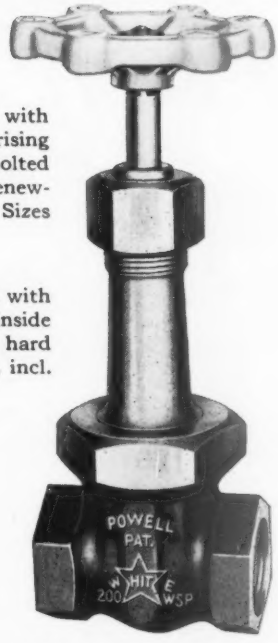
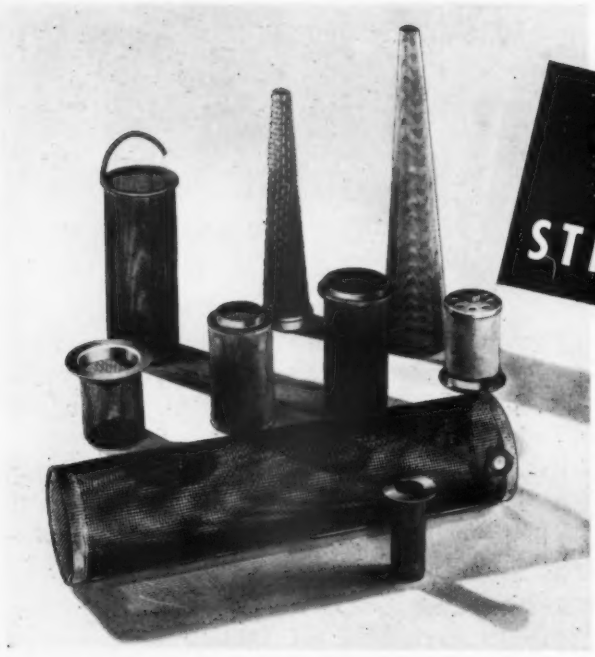


Fig. 500
125-pound Bronze Gate Valve with screwed ends and screwed-in bonnet. Sizes ¼" to ¾" equipped with taper wedge solid disc; sizes 1" to 3" with taper wedge double disc.

The POWELL Line includes Globe, Angle, Gate, Check, Relief, Y, Non-Return and other types of valves in bronze, iron, steel, pure metals and special alloys to meet Industry's demands for DEPENDABLE FLOW CONTROL EQUIPMENT.

POWELL VALVES

When writing The Wm. Powell Company please mention Purchasing



JELLIFF FUEL STRAINERS

IF YOU WANT quality strainers on time, at a fair price, WRITE US NOW.

Jelliff has all the facilities for making fuel strainers. Wire drawing, weaving, and fabricating all in one plant — each step carefully watched by an inspector trained for that particular job. Rigid adherence to specifications and tolerances is guaranteed; AND SHIPPING SCHEDULES ARE MAINTAINED.

The C. O. JELLIFF MFG. CORP.
22 PEQUOT AVENUE • SOUTHPORT, CONN.

PAY NO MORE
—but Get this EXTRA SHOVEL VALUE!

EDGES GUARANTEED SPLIT-PROOF

The Blades of Ingersoll Shovels are made exclusively from fine Tillage Steel. It is the same type of steel we roll in our New Castle Mills to produce the Discs for America's largest Implement Manufacturers. This Special Steel known as TEM-CROSS is cross-rolled to give an interlocking, mesh-grain structure. That's why we can guarantee the blade edges to be split-proof. That's why Ingersoll shovels give you so much more value without extra cost.

Write for Catalog and Prices. Address New Castle Plant. Dept. P.
INGERSOLL STEEL & DISC DIVISION
BORG-WARNER CORPORATION
NEW CASTLE, INDIANA
Plants: New Castle, Ind.; Chicago, Ill.; Kalamazoo, Mich.

INGERSOLL SHOVELS "A Borg-Warner Product"

(Continued from page 198)

name of booklet issued by Pioneer Rubber Mills, 353 Sacramento St., San Francisco, which tells how to get longer use from hot water and steam hose, conveyor belts, fire hose, and transmission belts. A free supply of "Rubber—Handle with care" tags for attachment to rubber equipment is offered also.

Coated Abrasives: "Blueprint for Faster, Better Production With Coated Abrasives" is the title of a new 16-page technical book in three colors, being distributed by Behr-Manning, Troy, N. Y. It is suggested that plant engineers and production men will find many valuable suggestions within the book on the effective use of spiracords, pencils, slotted discs, spirapoints and spirabands,—so-called sanding gadgets.

Rotary Pumps: Chart in card form for hanging on the wall or attachment to pipe near a pump location, to serve as a reminder to maintenance men, will be mailed in any reasonable quantity upon request to J. B. Trotman, General Sales Manager, Blackmer Pump Co., Grand Rapids, Mich. Card is known as Form SER-1.

Chip Breaker Charts: The McKenna Metals Co., 180 Lloyd Ave., Latrobe, Pa., announces that chip breaker charts are available upon request, to metal machining plants using carbide tools. The chart, printed in three colors, present dimensional diagrams for the correct grinding of parallel, angular and groove type chip breakers. They show pictures of the three chip breaker types and the kind of chips which will result from the use of each type of breaker, and precautionary instructions.

Grinding Wheels: Helpful hints and safety suggestions and information on the grinding wheel, constitute the subject matter of 64-page book issued by the Macklin Company, Jackson, Mich. Facts based on experience present the way to better finishes and more production.

"Victory Production and Maintenance News," published by the Allis-Chalmers Co., Milwaukee, Wis., is being illustrated and edited to help industry find out how to keep its production machines running through the rest of the war. Your name will be put on the mailing list for the asking.

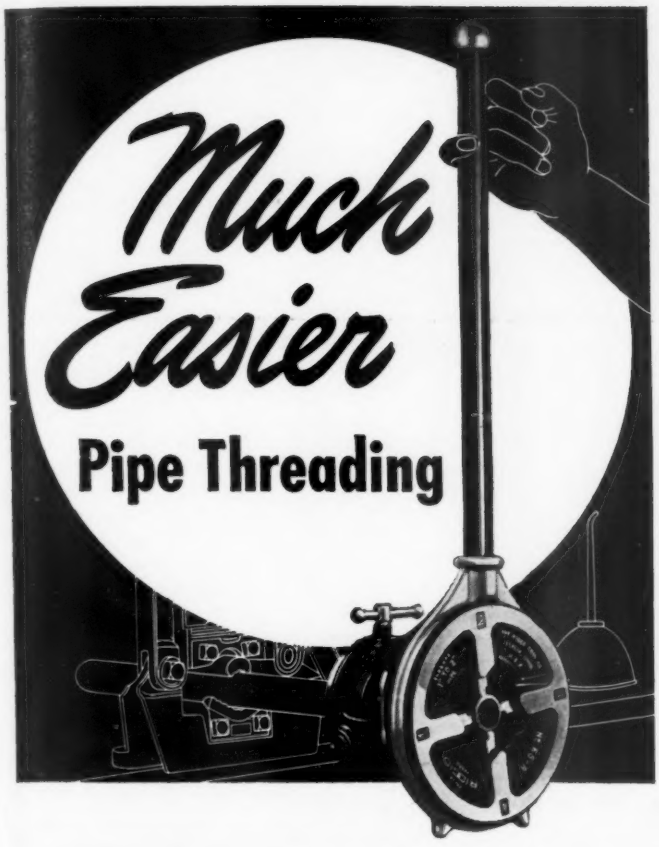
"Sightseeing at Home." This is the name of a movie just released by Visual Instruction Section, General Electric, Schenectady, N. Y., which portrays the wonders of home entertainment made possible through the medium of television. It shows the technique of television projection, and explains the method of planning settings and programs, and television broadcasts. It is available at no other cost than transportation charges.

* * *

SPECIALIZE ON INDUSTRIAL SKIN DISEASES

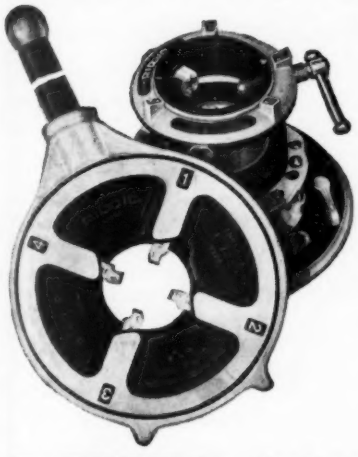
A scientific "detective force" of six dermatologists and one chemist has tracked down causes of skin disease—and prevented further outbreaks—in more

(Continued on page 202)



RIDGID No. 65R
Threads 1" to 2" Pipe with same dies

LOOK at the time and work this No. 65R saves you. One set of chasers gives you smooth perfect threads on 1", 1¼", 1½" and 2" pipe, any metal, any thread variation — no extra chasers to bother with; adjusts to size in 10 seconds. Foolproof workholder sets instantly, only 1 screw to tighten. Because of straight-line action ... handle to head to chasers ... it threads so easily you can turn it with your little finger. A durable steel and malleable tool with many other features. Ask your Supply House.



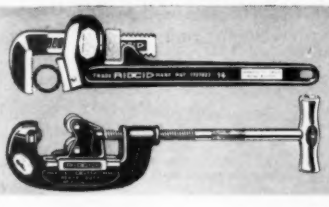
RIDGID
Compound Leverage Wrench

THIS compact powerful pipe wrench breaks out any frozen joint, saves the waste of smashing off old valves and fittings so valuable today, quickly pays for itself in salvage. Having 14 times the leverage of a regular wrench of similar capacity, it makes one man strong enough to make up any new job or take down an old job. Short handle helps in tight quarters. Easily attached to any pipe or fitting. Four sizes for pipe to 8 inches OD. A profitable work-saving tool that is invaluable in any kit. . . . It pays you to ask your Supply House.

Buy RIDGID Pipe Tools at Supply Houses Everywhere

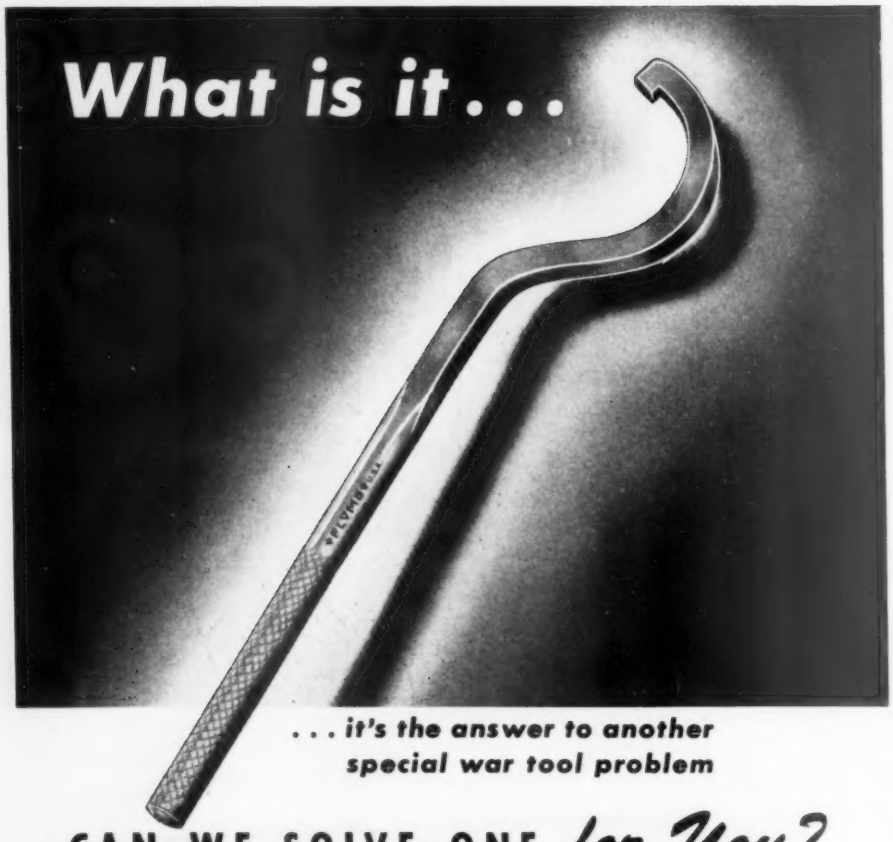
RIDGID
★ PIPE TOOLS ★

THE RIDGE TOOL COMPANY
ELYRIA, OHIO, U.S.A.



Fast-Working Tools for War . . . and the Busy Peace that's Coming

When writing The Ridge Tool Company please mention Purchasing



. . . it's the answer to another special war tool problem

CAN WE SOLVE ONE *for You?*

This special tool cut assembly time in half on a certain operation vital to war production. Analyze your problems. Could a specially designed tool save time and money for you, too? If so, consult us.

Plomb dealers handle stock tools for professional mechanics

Throughout the nation, dependable dealers carry complete assortments of supreme quality Plomb tools for war production and maintenance. For the fine hand tools you need, call the Plomb dealer nearest you.

Plomb gives you a 2-fold service

Plomb offers a double service to help speed your war job. It is made possible by the cooperation of 36 separate plants in making the fine hand tools we need for victory. Take advantage of it in these two ways: 1. Consult our engineers for special tools; 2. See your Plomb dealer for regular tools.

PLOMB

Fine Hand Tools for All Industries

PLOMB TOOLS CONTRACTING CO. *A Division of the*

PLOMB TOOL COMPANY

LOS ANGELES ▽ CALIFORNIA

(Continued from page 200)

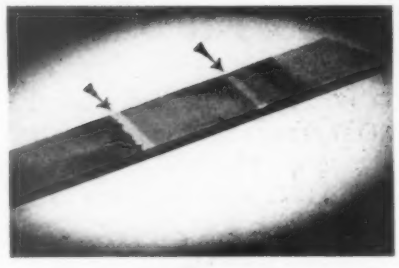
than 50 government and privately-owned arsenals and war plants, according to U. S. Public Health Service officials. Before these doctor-detectives of Public Health's Dermatoses Investigation Section went to work, almost 15 per cent of the workers handling explosives in these plants suffered from some form of industrial dermatitis.

The Dermotoses Investigation Section, known as DI, was organized in 1928 under the direction of Dr. Louis Schwartz, medical director of the Public Health Service. His section gets reports on skin disease outbreaks when plant doctors are baffled, and the DI doctors go to work until they unearth causes and are able to prescribe preventive measures.

Public Health officials are interested in educating plant managers and personnel directors as well as plant doctors in skin disease prevention. The government doctors assure the industry men that there is little to fear from most skin irritation. Most rashes can be cured by provided preventive measures such as protective clothing or ointments, frequent changes of clothing, supervised showers and better ventilation, Public Health doctors assert.

AIRCRAFT MOTOR FINS MADE WITH SCRAP STEEL TOOL

Large users of vital high-speed steel in cutting cooling fins for aircraft engines, Continental Motors Corp. now effects great savings by utilizing scrap high-speed steel sections joined to mild steel



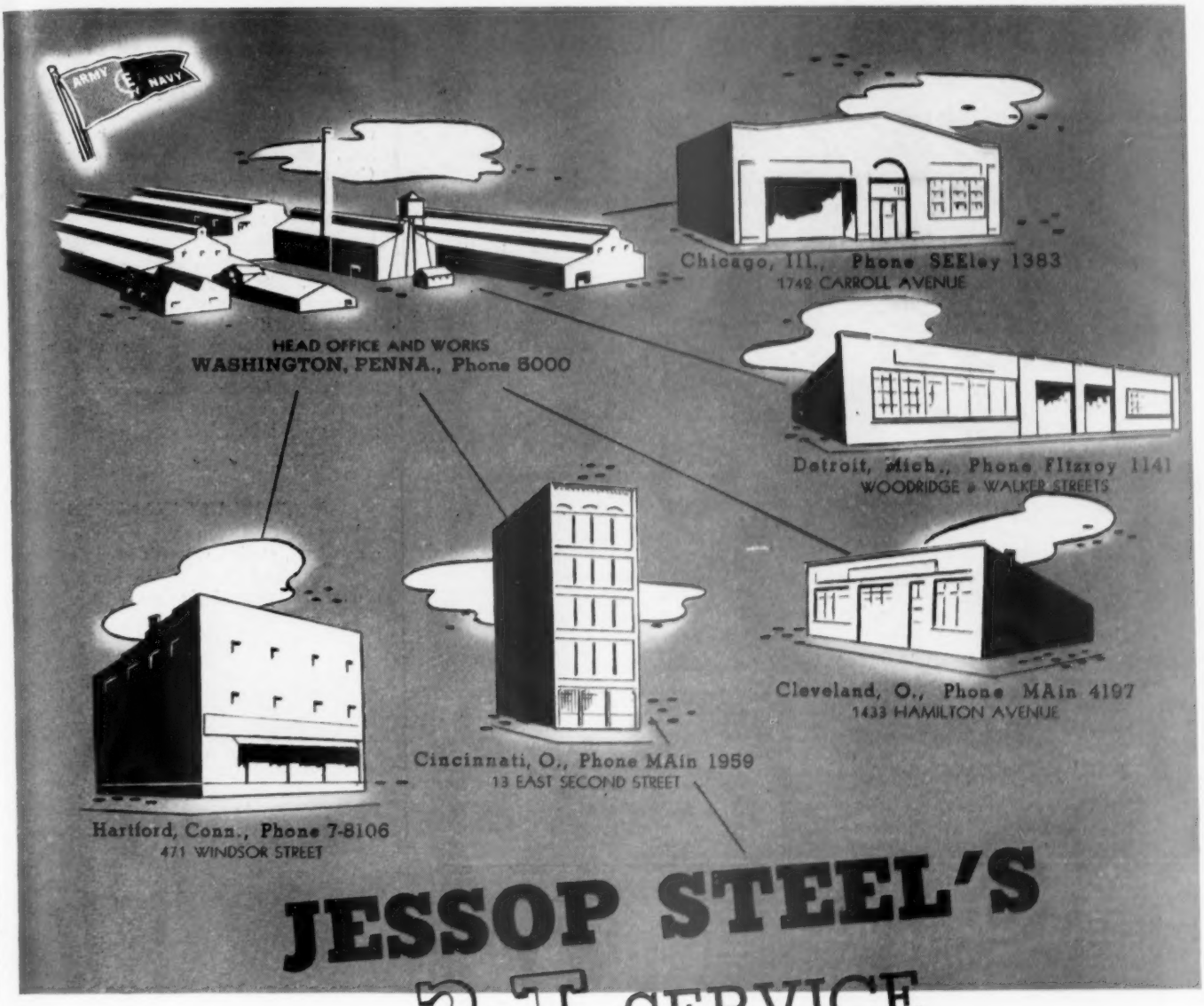
body. Accompanying illustration shows how this company fabricates this unusual tool by chamfering joints in X shape and joining pieces with Castolin Eutectic Low Temperature Welding Alloy.

Numerous brazing materials were tried on this job but none gave the strength required in such a cutting tool. Finally the desired strength was found in Castolin Eutectic. This low temperature alloy provided a joint at 1300° F with only localized heating—thus preventing annealing of the heat treated high-speed steel which retains all its original hardness. Also the cutting edges are not affected.

CENTRAL PURCHASING DEPARTMENT MAKES BIG SAVINGS

Purchase of supplies through a Central Purchasing Department saved the Nassau County (New York) government $114,166 in 1942, according to annual report of E. Stanley Bosanko, County Purchasing Agent. The figures brought the total sav-

(Continued on page 204)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1742 CARROLL AVENUE
Detroit, Mich., Phone Fitzroy 1141
WOODRIDGE & WALKER STREETS
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JESSOP STEEL'S 3-T SERVICE

Telephone *Teletype* *Telegraph*

Prompt, careful attention is given to your orders and inquiries at Jessop's warehouses and branch offices. They are strategically located in war production centers, and can be contacted by telephone, teletype or telegraph.

We maintain a staff of sales representatives and field service men to help you solve problems relating to availability and application of tool and die steels, stainless and stainless-clad steels. They are trained men — backed by Jessop's experience of over forty years in the manufacture of fine quality alloy specialty steels.

Jessop Steel
COMPANY
HEAD OFFICE and WORKS
Washington, Penna.

HIGH SPEED • SPECIAL ALLOY • CARBON
COMPOSITE TOOL STEEL • STAINLESS
STAINLESS-CLAD (SILVER-PLY)

Established 1901

When writing Jessop Steel Company please mention Purchasing

X Marks the Spot

This fast operating optical and electrical robot solves almost instantly the intricate mathematical problems of artillery fire. It transmits the answers mechanically to the gears and wheels which elevate and traverse the gun barrel.

Argus is proud of having a part in building these amazing fire-control instruments that direct gunfire with such deadly accuracy to the target.

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Fine American Made Cameras • Aviation Radio Equipment

BUY SPARTANS

For superior Cutting Service, Spartan offers Kutall Molybdenum High Speed, High Speed Flexard, All Hard and Flexible Hack Saws and Metal and Wood Cutting, Band Saws.

Stocks are maintained by Spartan Distributors in your locality. See yours today.

SPARTAN SAW WORKS, INC.
SPRINGFIELD, MASS., U.S.A.

"The Best Band in the Land"

HACK and BAND SAWS

(Continued from page 202)

ings since the establishment of the department in 1935 to $738,619. Prior to the establishment of the department, each of the county departments made its own purchases, frequently without competitive bids. The estimated savings to the County for 1942 are conservatively estimated at 10%, according to the report. Estimated savings through obtaining lower prices and trade discounts on $1,076,639 in purchases amounted to about $107,639. The cost of operating the department for the year was $80,454. A total of 13,939 orders were issued for materials, supplies and equipment for 57 county departments, offices, institutions and boards for the year. Fifty-four contracts were negotiated after published notices for bids.

* * *

AVOIDING TIRE HEADACHES

Why the tires on company trucks, salesmen's cars, station wagon's used for light deliveries, and those on the family car, should be rotated in accordance with

recommended practice, is well demonstrated in the accompanying illustration. The four tires shown were mounted at the same time on the same automobile and were never driven above 35 miles an hour during an entire road test conducted by the B. F. Goodrich Company. The excess tread wear on the rear-wheel tires shown at the right could have been avoided by tire rotation.

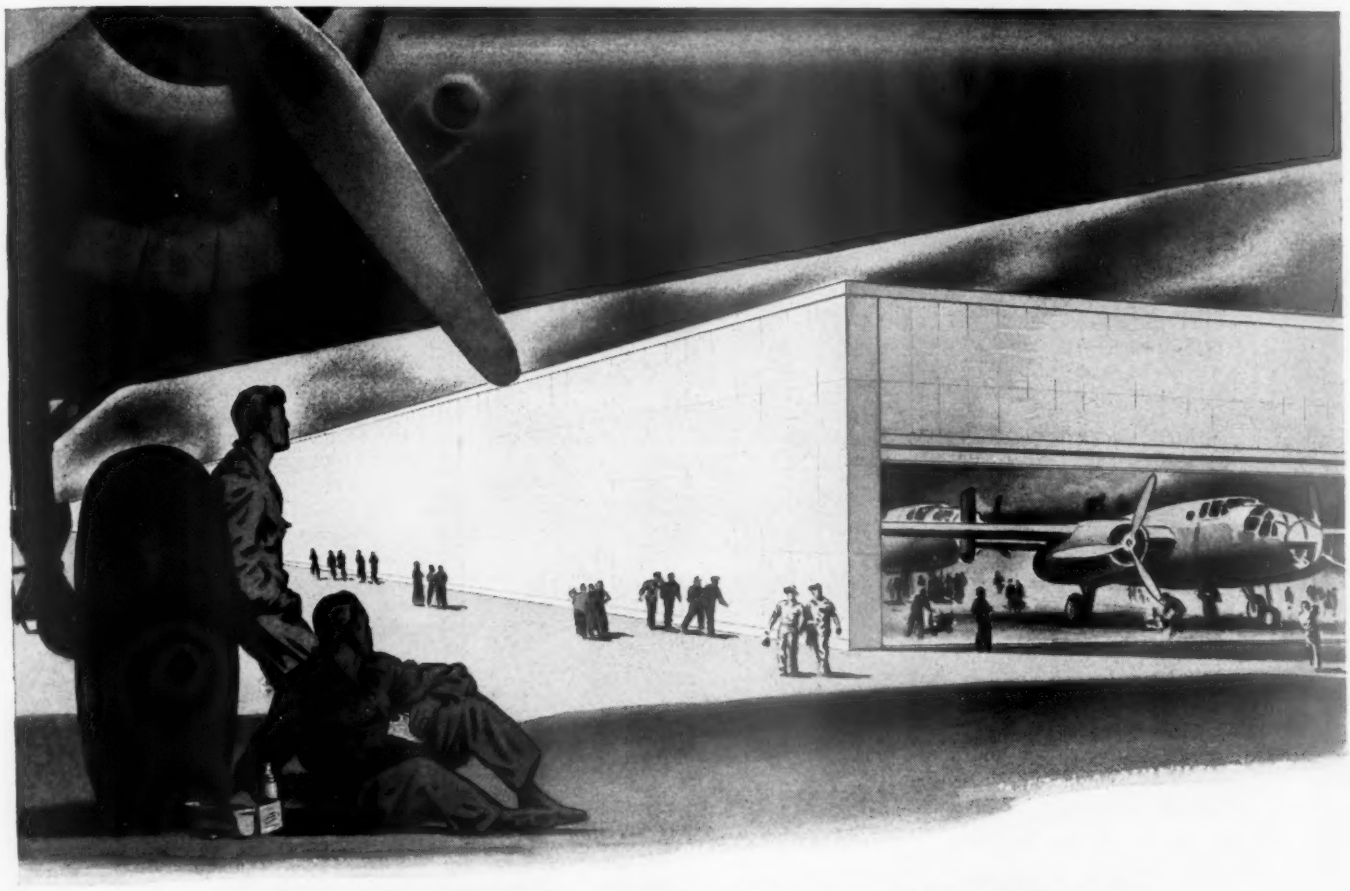
SYNTHETIC TIRES PROMISED FOR 1943

Barring any major new obstacles, a limited number of synthetic rubber tires will be made available to the public by the end of the year, William M. Jeffers, Rubber Director, reported on March 2. By late summer of 1944 the program of tires for civilians should be in full swing and drivers will get a better grade of tire than originally believed, he said. Experiments with synthetic passenger car tires conducted in Texas and California give basis for the optimistic outlook on tire quality, he continued, and when some "bugs" are removed synthetic tires may compare well with natural ones.

Jeffers declared it now appears unnecessary to extend the East Coast ban on pleasure driving to the rest of the

(Continued on page 206)

Looking ahead with Asbestos



"BOY, NOTHING HERE BUT A VACANT LOT 98 DAYS AGO!"

"Yes, sir," says Joe Wingworker, "Three months ago she was just a vacant lot, full of weeds and old tin cans. And now look at her! That asbestos lumber made a plane plant spring up mighty quick. And they tell me the stuff won't rot or rust or ever need paint."

Righto, Joe! That "Stuff" is Keasbey & Mattison's "Century" Apac Board, and if you have anything to do with construction or maintenance after this war, you'd better make a note of it. Why, it's not only maintenance-free, it actually gets tougher with age and it's fire-resistant and weather-resistant.

Also remember, Joe, that Apac is an all purpose board . . . it is designed for roofing or siding and for interior walls, ceilings and partitions. No wonder more than 50,000,000 square feet have been used in essential war construction to date. "Century" Apac Board goes up fast . . . is trouble-free thereafter.

Total war has shown manufacturers in all fields how to produce faster and better. This, coupled with the fact that wartime building needs have lessened considerably, means that this material is now available again for widespread use.

If industry has its way, this new production efficiency will be kept at work after the war, making all the things a peacetime world will want and need—new things resulting from vision and research today.

* * *

Nature made asbestos;
Keasbey & Mattison, America's asbestos pioneer,
has made it serve mankind . . . since 1873

KEASBEY & MATTISON COMPANY, AMBLER, PENNSYLVANIA

Makers of

asbestos-cement shingles and wallboards; asbestos and magnesia insulations for pipes, boilers, furnaces; asbestos textiles; asbestos electrical materials; asbestos paper and millboard; asbestos marine insulations; asbestos acoustical material; asbestos packings; asbestos corrugated sheathing and flat lumbers; asbestos-cement pipe for water mains

When writing Keasbey & Mattison please mention Purchasing

THIS IS WHAT HAPPENS WHEN
SWEATING ROBS THE BODY OF SALT
-5% LASSITUDE
-10% LOSS OF WILL TO WORK*
-20% EFFORT FORCED*
-30% DIZZINESS*
-40% HEAT CRAMPS
-50% PROSTRATION
*HEAT-FAG
THAT IS WHY AMERICA'S LEADING MANUFACTURERS FURNISH SALT TABLETS TO WORKERS
When men sweat, one of the most essential body minerals — salt — is dissipated. Vitality is sapped. Lassitude sets in. Heat-Fag follows and even cramps or prostration result if salt lost through sweating is not replaced.
Beware of Heat-Fag. It is a dangerous, insidious force that brings on fatigue — renders men inalert—slows down reactions. Often it is the direct cause of industrial accidents. As salt is sweated out, the worker tires, becomes careless — a slight miscalculation — and another costly accident is chalked up. Heat-Fag has again taken its toll.
Production-minded men know that Salt Tablets are a "must" for workers who sweat and do hot work. That's why they are always available in leading industrial plants...why they are recognized as the simple, easy and sanitary way to replace the body salt sweated out.
MORTON'S
Heat-Fag
SALT TABLETS
QUICK DISSOLVING
(Less than 30 seconds)
This is how a Morton Salt Tablet looks when magnified. See how soft and porous it is inside. When swallowed with a drink of water, it dissolves in less than 30 seconds
Case of 9000, 10-grain Salt Tablets, $2.60
Salt-Dextrose Tablets case of 9000, $3.15
Place
MORTON'S DISPENSERS
at all Drinking Fountains.
They deliver salt tablets, one at a time, quickly, cleanly — no waste. Sanitary, easily filled, durable.
500 Tablet size - $3.25
1000 Tablet size - $4.00
Order from your distributor or directly from this advertisement.
MORTON SALT COMPANY • CHICAGO, ILLINOIS

(Continued from page 204)

country as a tire conservation measure. However, he warned there could be no modification of mileage rationing restrictions this year.

ISSUE REVISED STANDARD STEEL ANALYSIS CHART

A new, revised standard steel analysis chart has just been published by American Steel & Wire Co., U. S. Steel subsidiary, to aid war time steel users.

Embracing all modifications and changes in the analyses of AISI, SAE and the new NE steels up to February 1, the chart folds up to a small, compact size readily available for easy reference.

A new helpful feature is the breakdown which shows whether or not various types of products are available in specific analyses, together with the listing of the varying amounts of different component elements used in producing the various grades of steel. The chart covers carbon and free cutting steels, manganese, nickel, nickel chromium, and molybdenum steels, in addition to chromium, chromium vanadium, silicon manganese, and National Emergency steels.

Copies may be obtained by writing on a company letterhead to the Sales Department, American Steel Wire Co., Rockefeller Building, Cleveland, Ohio.

WAR STANDARDS FOR SAFETY SHOES

Five Standards for safety shoes, which will save valuable war material and at the same time protect the worker against injuries, have just been completed by the American Standards Association, New York, at the request of the War Production Board.

The first of these, "Specifications for Men's Safety-Toe Shoes" (241.1-1943), provides uniform requirements for a work shoe with a steel toe-box that will adequately protect the worker from falling objects—the most common of all causes for lost-time accidents.

Men's Conductive Shoes (241.3-1943): to provide protection to the plant and to the wearer in operations where the accumulation of static electricity in the body of the wearer is likely to cause an explosion.

Men's Explosives - Operations (Non-Sparking Shoes (241.4-1943): to provide protection to the foot for operations in which sparking presents a hazard.

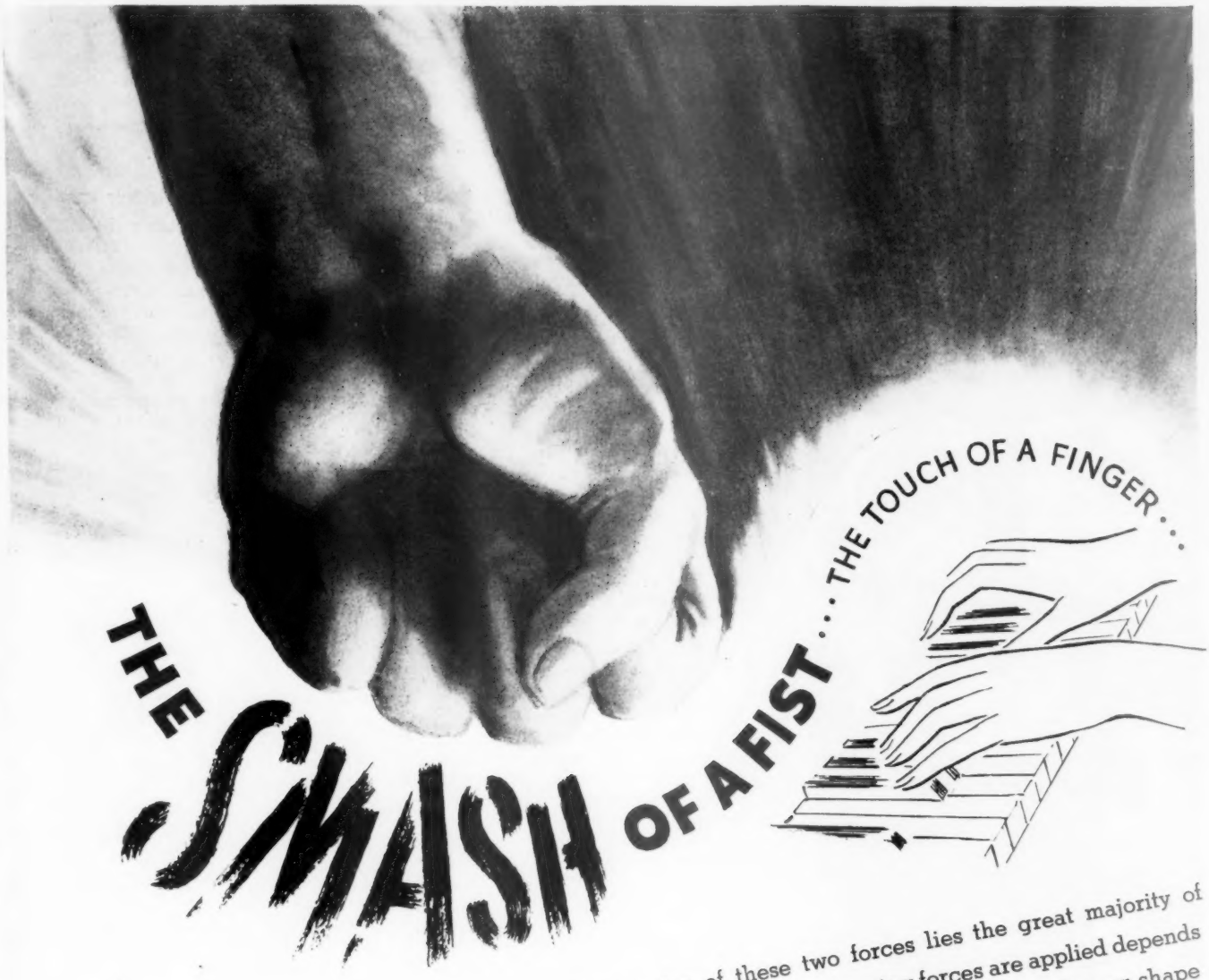
Men's Electrical-Hazards Shoes (241.5-1943): to minimize hazards due to contacts with electrical current, and also to provide protection to the toes from an impact force.

Men's Foundry (Molders) Shoes (241-6-1943): to provide protection to the foot of the wearer against hazards existent in the handling of molten metal.

All of these shoes can, of course, be built with or without the safety toe-box specified in the first standard.

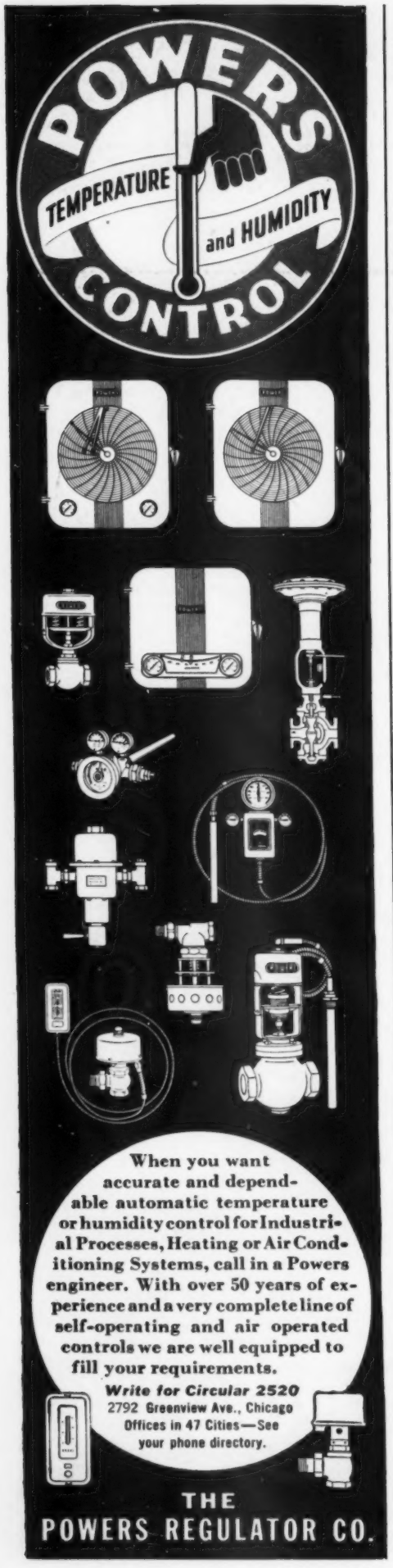
Standards for safety shoes for women, and standards for shoes to protect men workers from still other industrial hazards are in process of development. Work

(Continued on page 208)



Within the boundaries of these two forces lies the great majority of spring usage. By what method these varying forces are applied depends on individual requirements of space and performance. Size or shape of the spring is not an indication. Large springs may be made to transmit a flicker of impulse — small springs can bear the shock of heavy loads. There are many ways to exert identical spring force — there is only **one** way to apply it to your requirements. To get correct spring results is the work of scientific engineering methods. You find these methods in constant use at Gibson's.

When writing The William D. Gibson Co. please mention Purchasing


POWERS
TEMPERATURE and HUMIDITY
CONTROL
When you want accurate and dependable automatic temperature or humidity control for Industrial Processes, Heating or Air Conditioning Systems, call in a Powers engineer. With over 50 years of experience and a very complete line of self-operating and air operated controls we are well equipped to fill your requirements.
Write for Circular 2520
2792 Greenview Ave., Chicago
Offices in 47 Cities—See your phone directory.
THE
POWERS REGULATOR CO.

(Continued from page 206)

on safety shoes for women is of especial importance due to the influx of women to heavy industry.

TO STANDARDIZE WOMEN'S WORK CLOTHES

The Office Of Price Administration has requested the American Standards Association to initiate a war project to standardize women's work clothes. The request has been endorsed by the War Production Board. In developing the standards, due consideration will be given to: (1) Adequately protecting the worker against specific occupational hazards, thus preventing acidents and reducing absenteeism resulting from accidents. (2) Conserving critical materials and other resources while maintaining an adequate degree of serviceability. (3) Facilitating the work of OPA in their pegging of quality to simple and equitable price regulation.

ELECTRICAL WHOLESALERS TO HOLD WAR CONFERENCE

The National Electrical Wholesalers Association has scheduled an Industry War Conference at the Hotel Statler, Buffalo, N. Y., May 24-26, inclusive. The meeting has been called because of the necessity for improving and speeding up distribution methods for getting products of the electrical industry where they are needed most efficiently and speedily. The program Committee consists of W. I. Bickford (chairman), Westinghouse Electric Supply Co., Pittsburgh; D. L. Fife, Fife Electric Company, Detroit; and W. J. Kranzer, Crannell, Nugent & Kranzer, Inc., New York. Charles G. Pyle, 500 5th Ave., New York, is managing director of the association.

NEW MINERAL RESOURCES DIRECTOR

Howard Young, President of the American Zinc, Lead & Smelting Co., St. Louis, Mo., has been appointed Director of the new WPB Mineral Resources Coordinating Division and chairman of the two related committees—the Mineral Resources Operating Committee and the Minerals and Metals Advisory Committee.

MASTER PLAN FOR COMPANY VICTORY GARDENS

In the belief that millions of industrial workers will plant Victory Gardens if given the opportunity, the National Victory Garden Institute, 598 Madison Ave., New York, has just issued a Master Plan for company Victory gardens. Already industrial plants, railroads, public utilities and many large concerns have provided spacious tracts of property to employes for gardening. The plan was devised by L. A. Hawkins, horticultural expert of the International Harvester Company, who has supervised planting for that organization.

Executives interested in the plan can obtain copies from Andrew S. Wing, Secretary-Manager of the National Victory Garden Institute, 598 Madison Avenue, New York, N. Y. The Institute, of which Paul C. Stark of Louisiana, Mo., is president, is a privately supported, nonprofit, educational corporation.

PAPER BOX CONVENTION IN MAY

The 25th annual meeting of the National Paper Box Manufacturers Association will be held at the Drake Hotel, Chicago, May 16 to 19. Wm. R. Kreeger is secretary of the association whose address is Broad and Arch Streets, Philadelphia, Pa.

NATIVE RUBBER PRODUCTS FROM SOUTH AMERICA

The intensified efforts to revive and modernize South American jungle rubber sources have not yet eliminated some of

the quaint items that were wont to pop up in shipments from down that way. Culled from a recent shipment to B. F. Goodrich and headed for the mixing mills now is this typical collection of oddities—hand-fashioned rubber shoes, two small rubber water bottles, a knife with an improvised rubber handle, and a big rubber ball used in a native game called "batos."

NATIONWIDE CAMPAIGN TO IMPROVE PACKING AND SHIPPING

Importance to the war effort of good packing, secure loading and careful handling of freight shipments will be stressed in a nation-wide campaign to be sponsored by the National Association of Shippers Advisory Boards, according to E. A. Jack, of Pittsburgh, general chairman of the committee in charge of the drive and general traffic manager of the Aluminum Company of America.

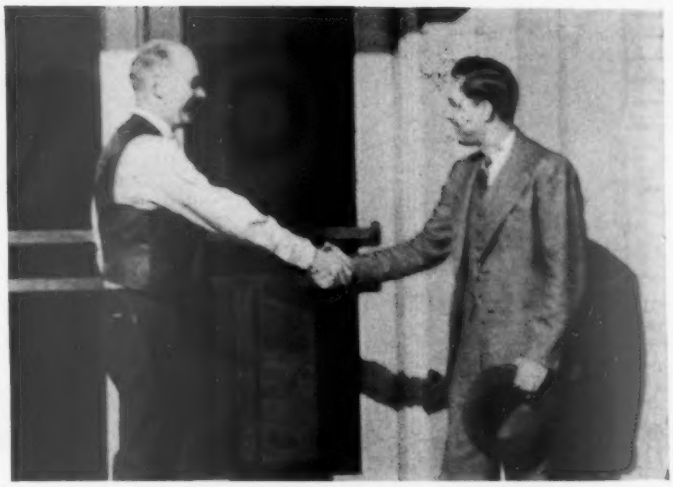
LAY PLANS TO REDUCE MILEAGE OF GOVERNMENT CARS

President Roosevelt has called upon each federal department and agency to appoint a mileage administrator to organize and control the use of that agency's motor vehicles in order to reduce the mileage of all government cars by at least 40 per cent.

Prentiss M. Brown, Administrator of the Office of Price Administration, said the President had asked him to supervise the conservation plan and coordinate the work of federal mileage administrators

When writing The Powers Regulator Co. please mention Purchasing

E. L. Weir, warehouse supervisor, General Electric Supply Corporation, Louisville, Ky., is here getting conduit to fill an order from local war plant, which is increasing wiring in hazardous location.



D. Wright (right), salesman, Miller Seldon Electric Co., Detroit, Mich., G-E distributor, being greeted by D. E. McGee, purchasing agent, Vinco Corporation on wiring materials service call.

H. P. "Hank" Brill, manager, Southern Tier Electric Supply Co., Inc., Elmira, N. Y., G-E distributor, is here talking with customer about wiring materials to be used for special additional wiring in war plant.

The G-E wiring materials field force is divided into geographical districts in order to provide greater help for distributors and their customers. Here is J. H. Newman, manager of District No. 1. His headquarters are in Boston, Mass.

G-E WIRING MATERIALS

See your G-E Wiring Materials Distributor about conduit, wire and cable, and wiring devices. He is eager to serve you. Appliance and Merchandise Department, General Electric Company, Bridgeport, Conn.

G-E WIRING MATERIALS DISTRIBUTORS *Offer Supplies*

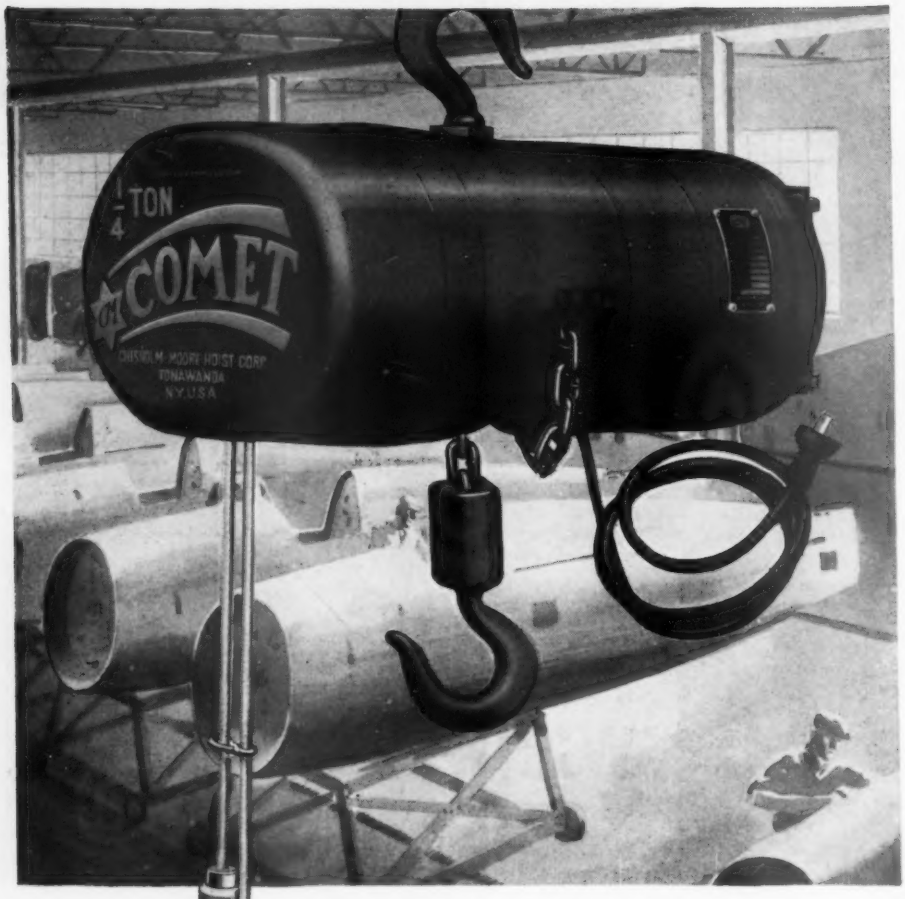
For Wartime Wiring Maintenance

You can obtain the wiring materials needed to keep wiring systems operating efficiently from the G-E Wiring Materials Distributor near you. Over 175 of these distributors are located at key points in different parts of the country. You'll find this close source of supply particularly helpful in maintaining today's tight 24-hour production schedules.

Your G-E Wiring Materials Distributor handles the full G-E line of high quality materials—conduits, boxes and fittings, wires and cables, BraidX, bus-drop cable and wiring devices including Silvend fuses having silver-plated contacts. This line, of course, includes materials suitable for wiring additions, wiring conversion and new war project wiring too.

Ask a representative of your G-E Wiring Materials Distributor to call. He'll show you maintenance materials particularly suited for your requirements. His experience will also be valuable in helping you to plan wiring changes and needed new wiring.

GENERAL ELECTRIC



LIFTING

War Planes on faster schedules

The CM Comet Electric Hoist is helping aircraft and other war industries set faster production schedules through efficient materials handling in practically all stores, fabrication and assembly departments. Durable and fast, the CM Comet is being used on trolleys, monorails, cranes and as a portable unit. *Efficiently operated by new personnel.* The versatile, low-cost, CM Comet will speed-up your production schedules. Write for illustrated engineering catalog No. 138.

CM COMET

★ ★ ★

INVEST REGULARLY IN VICTORY—BUY WAR BONDS AND STAMPS

★ ★ ★

CHISHOLM-MOORE HOIST CORPORATION

(Division of Columbus-McKinnon Chain Corp.)

120 FREMONT AVENUE, TONAWANDA, NEW YORK

BRANCH OFFICES: NEW YORK • CHICAGO • CLEVELAND

One Per Cent of Plants Get "E" Flags

Only one percent of all plants engaged in war production have been given the right to fly the "E" flag declared Brigadier-General A. G. Gillespie, commandant of Watervliet Arsenal, Watervliet, N. Y., at cremonies incident to awarding the Army-Navy "E" pennant to the Westinghouse Springfield plant recently. He also stated that American troops who invaded North Africa needed more than 25,000 pieces of ordnance equipment, exclusive of the thousands of other pieces of equipment not classed as ordnance items needed before the troops could go ashore ready to fight. Individual gold "E" emblems were presented to four plant veterans on behalf of all employees.

Eight Army-Navy "E" Awards were received by Westinghouse in 1942.

The Michigan Seamless Tube Co., South Lyon, Mich., has been awarded the Army-Navy "E" burgee, and the employees were presented with lapel "E" pins at recent ceremonies. Speaking at the ceremonies, Col. George E. Strong,

Wm. A. McHattie, President, Michigan Seamless Tube Co., South Lyon, Mich., accepts the Army-Navy "E" Award.

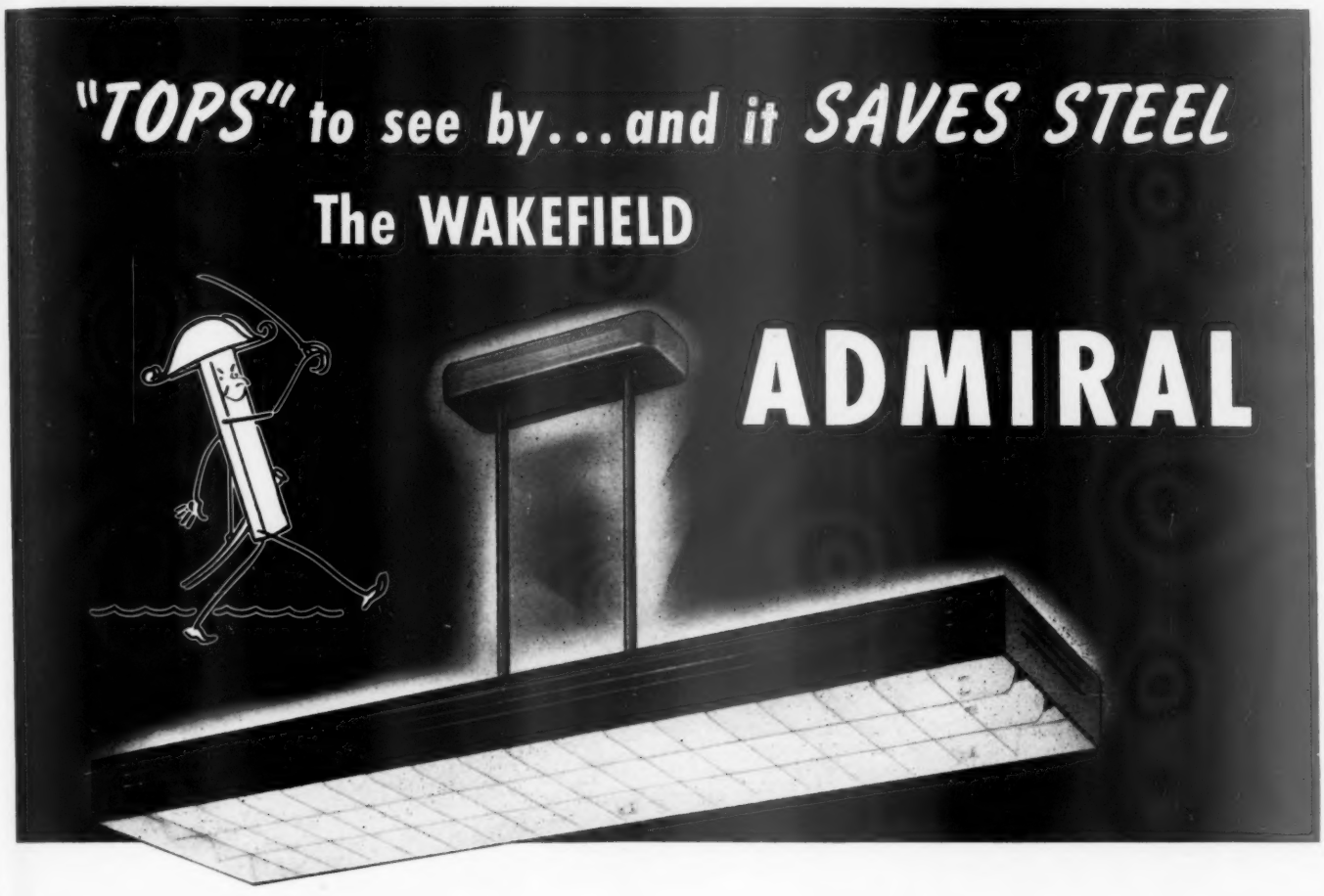
Internal Securities and Public Relations Officer, Army Air Corps, Detroit, expressed his belief that on all fronts the tide of battle has turned in our favor, but cautioned "that we still have a long way to go".

Barnes-Gibson-Raymond Division of Associated Spring Corporation, Detroit plant, was presented with the "E" burgee by Lt. Col. Hugh J. McNally of the Air Corps. and Lt. Comdr. Arthure Langfield, U.S.N. (Ret.), made a token bestowal of "E" pins to the employees. This is the second division of the Associated Spring Corp. to receive the "E" flag, the Wallace Barnes Co. Division having received the award sometime ago. B-G-R employees also are privileged to fly the "Bulls-eye" Treasury flag for purchase of war bonds.

Edwards & Company, Norwalk, Conn. Admiral William G. Watts, U.S.N., (Ret.), presented the Army-Navy "E" burgee to President R. Stafford Edwards at ceremonies in the Norwalk Armory, and Brig. Gen. Thomas E. Treland of

(Continued on page 212)

When writing Chisholm-Moore Hoist Corporation please mention Purchasing



Especially adapted for war plant office and drafting room

MADE largely of wood, THE ADMIRAL is designed to provide efficient fluorescent lighting as well as to conserve war materials. It gives diffused, high intensity lighting that helps office people handle essential paperwork faster, helps keep them at top efficiency longer, with less eyestrain and fatigue. Because it puts 90% of its light *down*, THE ADMIRAL is especially adapted for work that involves critical seeing or for areas with poor ceilings. And it saves almost enough steel on each 4-lamp unit to make a .30 cal. machine gun!

Perhaps THE ADMIRAL can help speed your war production by speeding paper work. Comes in 2-, 3- and 4-lamp units, which can be interconnected, on special order. Write for details.

IMPORTANT NOTE: At present, THE ADMIRAL is available only on lighting projects specifically approved by the Lighting and Fixtures Section of WPB and the Director of Industrial Operations. Such approval might be given if high intensity lighting is required on work essential to the war effort which also has the possibility of eliminating rewiring or materially saving copper and conduit.

SUBCONTRACTING? PERHAPS WE CAN HELP YOU

This booklet may help you decide

In peace time we specialize on lighting fixtures and fabricate light gauge metal parts. Right now we continue to supply essential lighting equipment to war plants and for government and military use. We have already completed many a subcontract. Perhaps we can help you. This booklet tells how.

"Facilities for War Production" gives a quick picture of our equipment, personnel and transportation available. It also gives the convenient location of our 17 trained resident engineers, always at your service. If you're interested, write for a copy.

THE F. W. Wakefield BRASS COMPANY

RED SPOT LIGHTING FOR COMBAT OPERATIONS AND WAR PRODUCTION

VERMILION, OHIO

When writing The F. W. Wakefield Brass Company please mention Purchasing

WHERE A SLIP MEANS A REJECT...

PLAY SAFE!
USE
PARKER VISES!

Too often, when work slips in a vise it means a reject . . . valuable time wasted, critical materials spoiled. Play safe . . . use Parker Vises!
Parkers grip work evenly, firmly, with accurately controlled pressure. They're precision-built . . . respond to the slightest turn of the handle . . . have no slack to take up when gripping or releasing. The Charles Parker Company, Meriden, Conn., U. S. A.

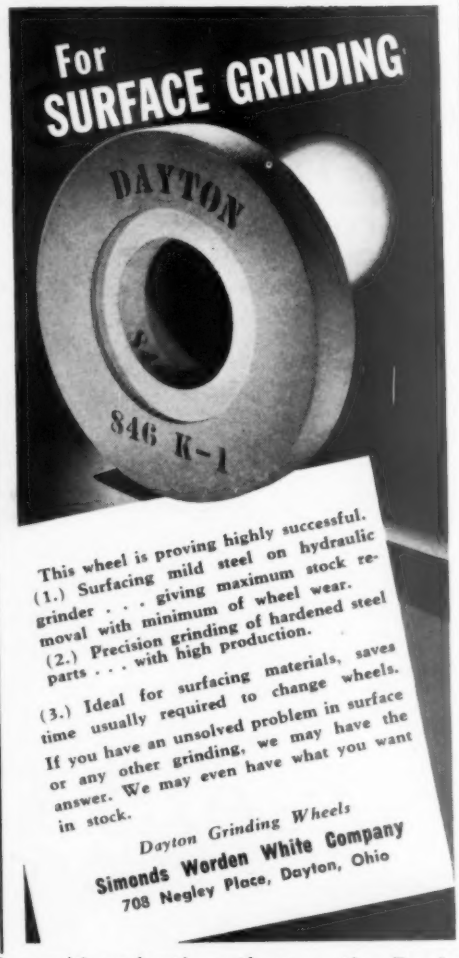
Handled by Leading Distributors

PARKER VISES — AMERICA'S OLDEST

☆

Be sure to read third article of series entitled "Basic Principles of Purchasing" page 105 this issue.

☆


For
SURFACE GRINDING
DAYTON
846 K-1
This wheel is proving highly successful.
(1.) Surfacing mild steel on hydraulic grinder . . . giving maximum stock removal with minimum of wheel wear.
(2.) Precision grinding of hardened steel parts . . . with high production.
(3.) Ideal for surfacing materials, saves time usually required to change wheels.
If you have an unsolved problem in surface or any other grinding, we may have the answer. We may even have what you want in stock.
Dayton Grinding Wheels
Simonds Worden White Company
708 Negley Place, Dayton, Ohio

(Continued from page 210)

the First Service Command, made token pin presentation to the employees. The Hon. Raymond E. Baldwin, governor of Connecticut made the keynote speech.

Illinois Gear & Machine Company. Some 500 employees attended the "E" flag and "E" pin award ceremonies at the plant of this company, which claims to be first among gear manufacturers to receive the Army-Navy "E" citation.

The B. F. Goodrich Company: The koroseal plants of the B. F. Goodrich Company at Niagara Falls, N. Y. and Louisville, Ky., have been awarded the Army-Navy "E" for high achievement in production of war materials.

The Greenfield Tap & Die Corp., Greenfield, Mass., for the second time has been awarded the Army-Navy production Award, and are the recipients of a new production award flag to which a white star has been added.

Hussmann-Ligonier Company. St. Louis, Mo., has been awarded the Army-Navy "E" flag, and its employees have been presented with the lapel "E" pins. The ceremonies attending the presentation were featured by musical selections by the regimental band, U. S. Naval Air Station, Lambert Field.

Ohio Injector Company. Wadsworth, Ohio. This company's Army-Navy "E" award has been renewed, and the company's pennant has now had added to it the white star denoting continued production achievement.

Louis R. Muskat. President, Triangle Package Machinery Company, Chicago, announces that his company has been awarded the Army-Navy "E" for excellence in production of war materials.

S. F. Bowser & Company, Inc., Fort Wayne, Ind., has again been honored by being presented with the sixth-month production star for continued meritorious production, and is now fiying the Army-Navy burgee with a white star.

Wittek Manufacturing Co., Chicago. This company and its employees were awarded the Army-Navy "E" flag and "E" pins at recent ceremonies in the Harrison Technical High School in that city.

Minneapolis-Honeywell Regulator Co., Minneapolis, Miss., for the second time has been awarded the coveted Army-Navy Production Award, and the thousands of new workers employed since the original award are now eligible to wear the silver "E" pins.

Simonds Saw and Steel Company. This company's saw, knife and file plant and its armor plate plant in Fitchburg, Mass., have been awarded the Army-Navy "E" pennant and employee lapel "E" pins. Ceremonies were held in the Simonds Controlled Conditions plant at Fitchburg.

General Electric Company: Fifty-eight General Electric technicians who were rushed to Hawaii to help repair

(Continued on page 214)

THE SPIRIT TO WIN RIDES THE ASSEMBLY LINES AT CLARK'S

SERVICE REPAIR

The Repair Department has recently moved [illegible] and a few changes in fixtures. He is still wondering about where the aisles are supposed to be.

Our latest member of the gang is none other than D. Grable, formerly of Holmes Motor Sales, more recently from his own place of business in Hastings, Michigan.

Our Little Boy Pete Owens is still somewhere in the East (but wasn't caught in the fire in Boston). We hope to see him by Christmas.

When anyone thinks of the idea of h[illegible] a check pool aga[illegible] Bob h[illegible] to get it, because [illegible] big and when he's luc[illegible] takes fire shop.

Mr. Wayne Pulsipher has a new man) Department of his own now . . . he in charge of the servicing and repair work of all the shop machines. We hope he makes a success of it, because they sure are in need of a lot of good care.

"Junior" Guy Blackburn has fully recovered from his recent operation, and is now back at work again. Glad to have you back again, Guy.

ENGINEERING

The monthly meeting of the Dogpatchers "Two and up you two" Club met Friday November 20th at the residence of Hairless Joe Loomis and the general concensus of opinion was that it [illegible] occasion these here parts sin[illegible] Besides the regular group several new faces showed up, among which were M'Lord Cedric Parsons, and Fearless Fosdick Hoyt. The latter proved his abilities as a No. 1 [illegible] with his pancakes and sausage, but the high spot of the evening came with the accidental discovery of the solution to the coffee rationing problem [illegible] and that stuff that [illegible] with the available coffee, and presto! . . . what have you? "Unbearable" Schepel was the chief victim of the experiment, and his last words were, quote [illegible] horse and buggy, unquote.

Eva Montgomery, the new "Blueprint Girl" has been dubbed "Moonbeam McSwine" by the Dogpatchers [illegible] regardless, for he [illegible] from across the [illegible] have met him are proud to know him. The United States Army has given him an honorable discharge as a result of injuries sustained in line of duty. Among other things, he participated in the Commando raid on Dieppe, France.

Add Don Gault to the growing list of Junior Executives—as we understand it, the difference between the Senior and Junior executives has something to do with their tilting ability in a swivel chair while telephoning or holding conferences. The Junior has a decided inclination to rush headlong into the matter.

For the benefit of those dreamers who incessantly whistle, let us all pray that we

ASSEMBLY

We wonder what Don Caldwell does on [illegible] most of the [illegible] mornings. [illegible] lots of [illegible] and Hel[illegible] we've known who braved the icy deep to catch them by hand.

[illegible] quite noticeable [illegible] could build in a day if we had parts.

At least one of the assemblers came back with his deer and proved it. The boys thank [illegible] and [illegible] ces.

People may be interested in knowing that Saturday, January 9th, was the biggest day ever for the Tructractor Division, with a record of [illegible] machines. Let's see how quickly we can beat that record.

[illegible] day ever for the Tructractor Division, with a [illegible] Let's see how quickly we can beat that record.

Clyde Converse is now back at work after a too-long illn[illegible] ving you back, Pop.

TOOL ROOM

Hap Flanders stages [illegible] one man crazy and [illegible] that [illegible] Tom's [illegible] speed that [illegible] Ball Baker's was a small's piece. Results—one sweeper ready to sell out, one broken hammer handle and [illegible] sore sides from laughter. [illegible] Pete [illegible] the North, each with a buck.

Did you ever try to hunt [illegible] truck off the [illegible] Ask [illegible] Yes, [illegible] cribs are [illegible] and George Coleman and Dan Cable on the 2nd shift. On the grinders we now find Irv

T. T. STOCK ROOM

New men in the Stock Room since last [illegible] Tommy [illegible] why do [illegible] here I come.

Any old overcoats today? Some people certainly have a knack of losing things. Maybe Bailey should put a part number on his overcoat before he checks it again.

We understand the Haun Hotel is not a very popular place to spend an evening. It seems as tho they could at least have a soft pine bench to sit on. Is the fifty dollar "sock" deductible from income tax?

We have spurs that "Jingle Jangle" in the [illegible] room. For conversation see A. Ferguson.

[illegible] glass in each hand [illegible] aisle looking for a [illegible] description of whom?

MACHINE SHOP

Bill O'Connell left us to enter the Army November 28th. Good luck, Bill.

Owen Kelley returned to work November 25th after a 90 day leave.

Will pay any price for a good pair of reconditioned roller skates. See Clive Stanley.

The meat ration problem was solved during deer hunting season by these men: Charley Coleman, 110 lb. Spike; Howard Buys, 160 lb. 6 Point; Hank Steele, 180 lb. 6 Point; Cliff Osborn, 175 lb. 8 Point; Harry Prill, 200 lb. 6 Point; Warren Wank, 147 lb. 8 Point; Howard Cooley, 205 lb. 10 Point. Nice shooting, fellows.

T. T. PRODUCTION

The production crew has definitely come to the parting of the ways, Messrs. Krohn, Harnish and Nichols decided they couldn't abide the rest of us so they packed up their desks and moved into the new building.

Connor Watson has a new system of drinking [illegible] The [illegible] type of chaser he [illegible]

Milt Whitmore has come to the conclusion that the gas tank [illegible] had was not designed to be used on an electric machine.

[illegible] arrival in the Stock[illegible] lost item, a bolt stretcher, but unfortunately it was the wrong size.

[illegible] Hap Nolte what [illegible] on the assembly [illegible]

Most of the personnel of the Production Office flip a coin to decide who is to buy [illegible] the group. Recently one of our [illegible] asked who wanted to flop for a coke.

Mrs. Hinson won a bet by showing up Monday, December 7 at 8 o'clock for work. Usually when she goes to Chicago she doesn't get here until noon.

SOURCE UNKNOWN

[illegible] we get defense stamps in the [illegible] old building.

[illegible] machines will now run forward without the key in the lock.

Use more care in leaving machines outside

We are all proud of our War job—providing speedy and dependable material handling from factory to car to ship to advanced supply depots

CLARK TRUCTRACTOR
DIVISION OF CLARK EQUIPMENT COMPANY
BATTLE CREEK, MICHIGAN, U.S.A.

• HELPFUL
• AUTHORITATIVE
• COMPLETE

READY FOR YOU NOW!

FREE-NO OBLIGATION

This carefully-prepared Conservation Handbook is offered as a working tool to industry by M.S.A., world's largest commercial manufacturer of approved safety equipment. You'll find the detailed suggestions for extending the life of your present safety equipment to be of sound, practical value—for purchasing, operating and maintenance men alike. The Handbook is available for wide distribution, without cost, as a further M.S.A. service in these times.

36 PAGES OF USABLE FACTS ON HOW TO GET THE MOST—FOR THE LONGEST TIME—OUT OF YOUR INVESTMENT IN ESSENTIAL SAFETY EQUIPMENT!

For outstanding production achievement . . . the Maritime "M" Pennant and Victory Fleet Flag, awarded to M·S·A by the U. S. Maritime Commission.

MINE SAFETY APPLIANCES CO.
BRADDOCK, THOMAS AND MEADE STS. · PITTSBURGH, PA.

(Continued from page 212)

the battleships California and West Virginia, have been awarded Navy "E" pins in recognition of their efficiency. The group was in charge of Charles Edwin Wilson, veteran technical engineer.

Ilg Electric Ventilating Company. Chicago. The "E" flag and coveted "E" pins were awarded to the Ilg Company and its employees at recent colorful ceremonies.

The Edward Valve & Manufacturing Co., Inc., East Chicago, Ind., and its employees were recently presented with the Maritime "M" pennant and labor merit insignia, highest production honors of the U. S. Maritime Commission.

Jenkins Bros. The workers of the Bridgeport, Conn. plant of Jenkins Bros. have been awarded the U. S. Maritime Commission's "M" pennant and employee emblems. Governor Raymond E. Baldwin of Connecticut was the principal speaker at ceremonies broadcast over the Blue Network.

And on Tuesday, March 9, Admiral Wat. T. Cluverius USN (Ret.), returned to Bridgeport to renew the Army-Navy "E" pennant with a new one featuring the Service Star evidencing production satisfactory to the Navy for the past six months.

The Weatherhead Company. Cleveland, has also been awarded the joint Army-Navy "E" burgee for excellence of war production. Twenty-five years ago, on March 27, 1919, Albert J. Weatherhead, Jr., president and founder of the company, received a citation from General John J. Pershing "for distinguished gallantry as a member of the 95th Aero Squadron in the operation of the A.E.F. at Boineville, France."

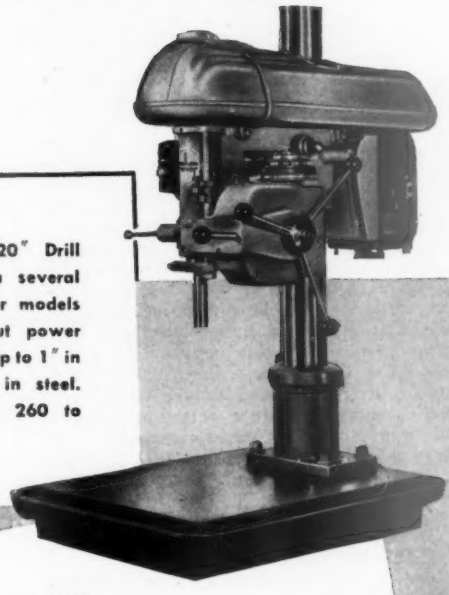
Army-Navy "E" production award Ceremonies at the plant of the C. O. Jelliff Mfg. Corp., Southport, Conn. Left to right, the picture shows Lieut. W. J. Goedert, Army Air Corps.; Lieut. John W. Power, USNR; Henry H. Rennell, General Manager of the company; Lieut. Col. Howard D. Norris, Army Air Corps; a military aide; and Major R. A. B. Heap, Ordnance Dept., U. S. Army.

* * *

Hercules Powder Company announces that it has opened sales offices in Boston for its cellulose products, naval stores, synthetics, explosives, and paper makers chemical department. Offices are on the seventh floor of the Statler building.

WEIGHT CONSERVATION...

for a Better machine gun - or a Better machine tool!



Walker-Turner 20" Drill Press. Made in several bench and floor models with or without power feed. Capacity up to 1" in cast iron, ¾" in steel. Spindle speeds 260 to 5200 r.p.m.

Walker-Turner Metal-Cutting Radial Machine. Transverse travel of 21½" enables operator to cut wide material and various shapes. Patented geared motor insures utmost economy in use of wheels. Many other features.

The lightning tempo of modern war calls for fast, light, accurate weapons And war production, likewise, demands machine tools specifically built for the thousand and one lighter operations where conventional units represent "too much machine" and not enough output.

To thousands of production lines, these simplified, compact Walker-Turner machine tools bring greater flexibility and adaptability — easier handling for unskilled labor — fast, accurate performance. Moreover, they represent a reduced capital investment, substantial power savings, and they are quickly available to war industries.

WALKER-TURNER CO., INC.
1343 BERCKMAN STREET • PLAINFIELD, N. J.

walker-Turner
COMPANY, INC.
PLAINFIELD, N.J.
U.S.A.

MACHINE TOOLS

DRILL PRESSES — HAND AND POWER FEED • RADIAL DRILLS
METAL-CUTTING BAND SAWS • POLISHING LATHES • FLEXIBLE SHAFT MACHINES
RADIAL CUT-OFF MACHINES FOR METAL • MOTORS • BELT & DISC SURFACERS

When writing Walker-Turner Co., Inc. please mention Purchasing

DoAll File Clinic

Your Clearing House for Tough Jobs

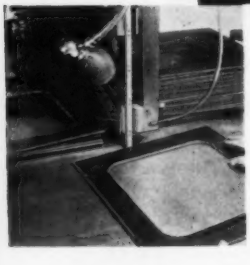
● Industry is taking full advantage of this modern way to better, faster, more uniform filing of any tool or part made from steel, copper, aluminum, and their alloys, ferrous castings, plastics, laminated products, also ticklish and hard-to-finish materials.

Skilled metallurgists and latest equipment, including the new photomicroscope, make this Research Laboratory the best testing ground in the country to overcome filing difficulties. Manufacturers are happy with results and so are we.

Send us one or more actual parts and we'll get busy at once—determine the proper file, best speed, table tilt, coolant, etc. to lick your problem. Costs you nothing—may save thousands of man hours and dollars.

BAKELITE TERMINAL BLOCKS

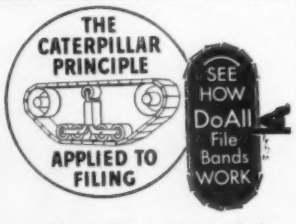
Job sent in by Providence, R. I., manufacturer, to determine the best method to dress off Bakelite and expose the brass inserts. Result: Use ¼" flat medium cut file, 24 pitch, run at 270 f.p.m. Time required — 1 minute for 9 faces per block. DoAll File Band lasts 75 hours and machines 4,500 of these blocks.



HOT ROLLED PLATES

Size 3/16" thick, 14" square. To determine time saving through use of band filing, as compared with former method. Result: Use ½" oval, 14 pitch file, run at 85 f.p.m. 50% to 60% saving effected and square, uniform finish obtained.

DoAll BAND FILES — Each is made up of a series of 3" segments mounted on a steel tape, interlocked with each other to form an even, solid, continuous, one-way travel surface that gets filing done in 1/5 the time of jig filing, ⅛ that of hand filing.



Send for pocket-size Band Filing Book, listing all sizes and styles of DoAll Files.

THE DOALL COMPANY

1214 Thacker Street — Des Plaines, Illinois

DoAll Branches in 25 cities, each in charge of a trained sales engineer to give you quick service. Consult your phone book.

RECEIVE RAW MATERIALS FROM FRENCH NORTH AFRICA

The United States and United Kingdom are receiving important quantities of strategic raw materials from French North Africa. Ships which brought American and British food, clothing and other civilian supplies to the people of North Africa have already brought back more than 50,000 tons of raw materials to British and American ports. Increasing shipments will follow.

In addition to manganese, cobalt ore, cork, tanbark and red squill, substantial quantities of iron ore have been reaching east coast ports of the United States.

Iron ore and phosphate rock are the major supplies reaching the United Kingdom from North Africa. After the United States, French North Africa is the world's largest producer of phosphate. This commodity is expected to aid appreciably in the United Kingdom's agricultural program.

The allocation of raw materials for export from North Africa is made by the Combined Raw Materials Board.

PLAN INDUSTRIAL-CIVILIAN HEALTH CRUSADE

A nation-wide health crusade, designed to make more fully effective the country's manpower for war and civilian requirements, will be undertaken by the Chamber of Commerce of the United States.

To carry on the work, the Chamber has created a National Health Advisory Council, headed by Dr. James L. McLester, of the University of Alabama, having as members 33 leading authorities on health, hygiene, safety and nutrition.

The council will give attention to health problems of both war industries and civilian establishments and to working capacity and safety measures in war boom communities. The work will supplement the annual health contest conducted by the Chamber among its member organizations.

AIR EXPRESS HAD RECORD YEAR IN 1942

Air express operations over the nation's commercial airlines during 1942 were given added importance as the result of our entry into World War II. From January, the need for rapid movement of war materials sent air express tonnage figures shooting skyward month after month, with gross revenue showing equally sharp gains. Overnight conversion of U. S. industry to all-out war production caused average weight of shipments to double while individual shipments weighing more than 100 pounds were routine, according to the Air Express Division of Railway Express Agency.

In the first ten months of 1942, a total of 17,442,439 pounds were handled, an increase of 93.6 per cent over the similar 1941 period. Shipments totaled 1,163,157, up 9 per cent, while gross revenue increased 113 per cent over the 1941 period.

AMONG THE PEOPLE YOU BUY FROM

J. D. Holmes has been named manager of the newly organized Feedwater Treating Division of the Magnus Chemical Co., Inc., Garwood, N. J.

Robert G. Patterson has been appointed General Sales Manager for the Lamson & Sessions Co., bolt and nut manufac-

turers, with headquarters in Cleveland. For the past three years he has been in charge of wholesale and industrial sales through the branch offices of the company.

E. C. Bowers is president of the recently organized Wickwire Spencer Aviation Corp., a new subsidiary of the Wickwire Spencer Steel Co., New York, of which he is also president. J. D. Stites is manager of the subsidiary.

Charles H. Manion, vice president in charge of operations of the Follansbee

Steel Corp., Pittsburgh, has been elected a member of the board of directors.

Bi-Metallic Products Corp., Chicago, has acquired the plant and equipment of the Sheridan Handle Co., Williamsville, Mo., and will operate it in the future as the Consolidated Handle Corp. The tool output will be supplemented with a line of

(Continued on page 218)

Picture of a man having his eyes opened

Furguson raised his eyebrows at the "specs" on the Government contract:

"Part No. 16-B, a forging. Guess they don't care what this job costs. And here are two more forged parts. Well, if that's what they want we'll get 'em."

But his eyes really opened when he got going on the job. Those forged parts required practically no machining — they "miked up" right on the head — and the number of rejects was negligible. They actually saved money on the job.

FORGINGS by PHOENIX

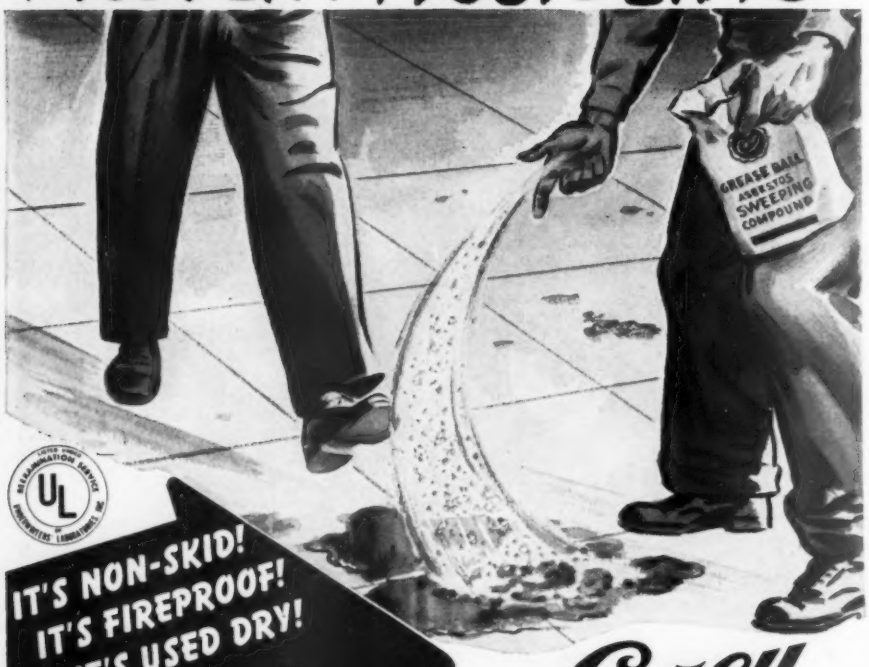
Furguson is already planning to use Forgings in his redesigned air conditioner just as soon as this business of winning a war is finished. He's learned, by experience, that Forgings provide extra strength and durability with less weight and bulk. He knows that his machining time will be materially reduced and that his production costs will be lowered.

Forgings by Phoenix have opened the eyes of hundreds of manufacturers, making possible greatly improved products plus definite savings in production costs. In your plans for the future, you may find it advantageous to talk with Phoenix engineers, and there's no obligation.

PHOENIX MANUFACTURING COMPANY
Catasauqua, Pa.

When writing Phoenix Manufacturing Company please mention Purchasing

PREVENT ACCIDENTS



IT'S NON-SKID!
IT'S FIREPROOF!
IT'S USED DRY!
•
QUICKLY CLEANS
GREASE CAKED FLOORS
•
NO CAUSTICS OR ACIDS-
HARMLESS TO HANDS,
FEET, CLOTHING!

Carey
GREASE BALL
ASBESTOS SWEEPING COMPOUND

At last a sweeping compound that quickly cuts away and removes gummy grease and oil deposits, thereby eliminating fire hazards and the cause of accidents due to slippery floors. Also neutralizes and soaks up acids around pickling vats, storage battery spillage, cleaning solutions, etc.

LESSENS FIRE DANGER

It's FIRE-SAFE. Classified as Non-Combustible by Underwriters' Laboratories, Inc. It is used DRY; nothing to add; floors remain dry. Easy to use. A good stiff brush is all equipment needed. Absorptive action; mildly abrasive. Inexpensive. May be used over and over until fully soaked.

Carey Grease Ball contains no acids or caustics. Does not harm hands, clothing or floors. No critical materials. Prompt shipment in convenient 50-lb. bags from 45 branch warehouses. Write for FREE sample and full information. Address Dept. 68.

10-POUND SAMPLE *brings* 1000-LB. ORDER

A prominent metals fabricator had serious floor condition due to drippings from steel sheets atfer oil treatment.

When the gummy, slippery mass of accumulated oil could not be removed by ordinary compounds, Carey Grease Ball was put to the test. Results were so satisfactory that a 1000-lb. order resulted.

THE PHILIP CAREY MANUFACTURING COMPANY

Dependable Products Since 1873
LOCKLAND, CINCINNATI, OHIO

In Canada: The Philip Carey Co., Ltd.
Office and Factory: Lennoxville, P. Q.

Continued from Page 216

tools to be marketed under the name Synthysteel.

J. E. Love is the new district manager of the Wiremold Co., Hartford, Conn., succeeding H. C. Moran, retired, with headquarters in Pittsburgh.

B. H. Quackenbush has been named assistant sales manager of Foote Bros. Gear & Machine Corp., Chicago. In his

new capacity he will continue to handle contract sales, and will supervise activitives of the priority and sales departments under the office of price administration on price regulations.

Wilfred C. Shattuck has been made wire sales manager with headquarters in New York, by the Wickwire Spencer Steel Company.

I. L. Jennings, vice president of the Lamson & Sessions Co., Cleveland, has

retired from active business for reasons of health. He has been vice president since 1941, and will remain as a director.

L. L. Brown Paper Co., Adams, Mass., announce the appointment of the Rourke-Eno Paper Co., New Haven, Conn., as a distributor of Greylock Ledger and Es-

cort Ledger and Machine Posting. The Baldwin Paper Co., New York, has been appointed distributor of Advance Linen Ledger, Advance Bond, L. L. Brown's Fine and Greylock Ledger.

Walter H. Norton has been appointed general manager of the footwear division of the United States Rubber Co., New York. He started with the company as a stock clerk thirty years ago.

Fred C. Smith has been made chief metallurgist of Tube Turns, Louisville, Ky. He was formerly employed by Carnegie-Illinois Steel Company in the capacity of field metallurgist.

E. C. Eaglen has been appointed to the position of co-ordinator of Post War Planning for the Oliver Iron & Steel

Corp., in which he will formulate a market development and research plan to guide the engineering and manufacturing departments in post-war production.

F. Howard Braithwaite has been elected vice president in charge of sales of the Crown Can Co., Philadelphia. Previously he was in charge of general line sales, his new position making him responsible for all company sales.

LeRoy R. Fischer has been named assistant sales manager—detergents, Philadelphia Quartz Co., Philadelphia.

The Majestic Company of Huntington, Ind., manufacturers of metal building specialties, has acquired the Brownie Manufacturing Co. of Fort Wayne, makers of clamps and turnbuckles, which will be operated as the Brownie Clamp Division of the Majestic Company.

DeVoe & Raynolds Company has formed a 3-man planning board to study post-war potentialities for the paint and brush industries. It consists of W. H. Matthews, vice president, chairman; Wm. C. Dabney, vice president, and E. L. Pangborn, vice president, all of whom are

(Continued on page 220)

Plenty of good light is essential to the war production program — but good lamps and lighting like so many other necessities, must be taken care of.

Make the most of the lamps you have* and when you buy replacements get lamps of Champion dependability.

Since 1900 the makers of Champion Lamps have concentrated their complete production, development and control resources on

1. **Champion Quality** — guaranteed to equal or exceed Federal specifications.
2. **Champion Service** — the right lamps at the right place, with trained experts available in the field to help on any lamp or lighting problem.
3. **Champion Economy** — lower light and lamp costs, quality considered.
4. **Champion Distribution** — through carefully selected industrial suppliers that know how to meet your needs efficiently and economically.

*Check your lighting set-up against the practical facts in the Champion Maintenance Manual — concise, clear, complete. Write for a copy, giving your name, company and position. Simply ask for Champion Manual H.

CHAMPION LAMP WORKS
Lynn, Massachusetts
A DIVISION OF CONSOLIDATED ELECTRIC LAMP CO.

When writing Champion Lamp Works please mention Purchasing

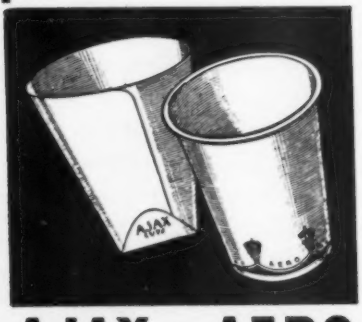
War Winners at Work

Can she continue inspecting sutures so badly needed for war hospitals, or will she have the flu tomorrow? The answer may be in the way she gets her drinking water. Are you furnishing sanitary single-service paper cups to your workers at all fountains?

Purchasing Agents

You can buy cheaper cups

but you can't get better value at any price!



AJAX AND AERO

Sanitary Paper Drinking Cups

LOGAN DRINKING CUP CO.
68 Prescott Street, Worcester, Mass.
PACIFIC COAST ENVELOPE CO.
416 Second Street, San Francisco
Divisions of United States Envelope Co.

Envelopes . Transparent Containers . Paper Cups . Writing Paper . Note Books . Toilet Tissue . Paper Towels

(Continued from page 219)

directors of the company as well as members of the executive committee.

The Acro Electric Company, Cleveland, Ohio, recently moved into a new plant at 1305 Superior avenue, Cleveland, where it has 300% more space than formerly. B. Winston is president, C. A. Robinson is general manager, and J. S. McComb is vice president and sales manager.

Employees of the Roller Smith Company, New York having five or more years of continuous service were awarded service emblems at a party attended by the company's 850 employees. 141 employees have been employed five years or longer and of these 61 have been with the company at least 15 years. Stars on the emblems symbolized five years of service each.

H. W. Prentis, Jr., president of the Armstrong Cork Co., Lancaster, Pa., has become a member of the Business Advisory Council of the United States Department of Commerce, Washington, D. C. The council is composed of some 60 business and industrial leaders of the United States.

The American Colloid Division of E. F. Drew & Co., New York, N. Y., has been assisting the U. S. Maritime Service train civilians for merchant marine positions by donating time, services and equipment for an intensive five-week course in boiler feedwater treatment. G. C. Reinhard, C. G. Welch and M. Guina of the company served as instructors.

Robert A. Hurley, former governor of Connecticut, has been elected vice president and director of the Narragansett Machine Co., Pawtucket, R. I.

Robert A. Hurley (center), Gov. J. Howard McGrath, R. I., and Norman Bolles, executive manager of Naragansett Machine Company.

Dr. C. B. F. Young, director of the Institute of Electro-Chemistry and Metallurgy announces the establishment of a new fellowship in the field of metal pickling inhibitors with especial attention to the

(Continued on page 222)

The Government wants to know!

Manufacturers like Markem identifications on shell casings, just as they do on a myriad of other parts and products, because Markem impressions are clean, clear, lasting.

Markem machines are so fast (1000 to 4000 per hour) they can fit into any production line. They ink-mark neatly with our King Markwell fast-dry inks. (Especially compounded to properly withstand lacquering.) They're fast, powerful, precision built and power-driven.

The size, shape and substance of steel or brass shell casings, (20 mm. to 3" AA.) present no problem and Markem stampings may be synchronized with the lacquering equipment.

Don't get rejections because of faulty marking! Let us protect you on this requirement just as we do other makers and loaders of shells.

Write or wire for details today. Catalog G4 on request.

MARKEM
VARIABLE DESIGNATION MARKING MACHINES

BOXES, LABELS, TAGS, ENVELOPES, TICKETS, TAGS, LABELS FROM CONTINUOUS ROLLS, COLLARS, SOCKS, STOCKINGS, SHIRTS, SHOE LININGS, TEXTILES, LEATHERS, SYNTHETICS, GLASS, METAL, WOOD, PLASTICS, PRINTED SURFACES, RUBBER SHEETS - ABRASIVES.

SHAPE AND SUBSTANCE PRESENT NO PROBLEMS. There's a Markem machine to identify or decorate every part or product known to industry. And out of the Markem laboratories come special process inks, rotatable type wheels, special type bars or master printing plates so that Markem is the only source of supply you need for marking machines, devices and supplementary materials.

MARKEM MACHINE COMPANY
KEENE, N. H.
Builders of Industrial Ink Marking Equipment

You made 'em - Now MARKEM

How FLEUR-O-LIERS help make the most of it!

Today, manpower is a number one problem for the nation's war plants. Accidents, waste, errors and fatigue take their toll of manhours — waste manpower. Read how FLEUR-O-LIERS — dependable fluorescent lighting fixtures — help check this waste.

Vital to eyes at work!

FLEUR-O-LIERS give you efficient lighting performance because of such advantages as high reflectivity from non-ferrous reflectors—*certified* starters and high power factor ballasts which assure maximum light from the lamps.

Save time—cut delays

FLEUR-O-LIERS are safe—durable . . . maintenance is easy and low in cost. And there are many other features that protect those who specify and those who work under this efficient lighting. Ask your supplier.

Why they're dependable

FLEUR-O-LIERS can give you this protection because they're checked and *certified* by impartial experts* as meeting 50 rigid specifications set up by MAZDA Lamp makers to assure balanced, satisfactory operation. And they're made by over 40 leading fixture manufacturers. Be sure the fixtures you specify bear the FLEUR-O-LIER Certification label.

FLEUR-O-LIERS that meet all WPB limitation requirements are now available to war plants under suitable priorities.

NEW! Get the complete story of the famous FLEUR-O-LIER specifications in booklet form. You'll want it for ready reference. Write FLEUR-O-LIER Manufacturers, 2139-4 Keith Building, Cleveland, Ohio.

**Electrical Testing Laboratories, Inc., New York*

THE SAME DEPENDABLE LIGHTING SERVICE WITH LESS CRITICAL MATERIALS

FLEUR·O·LIERS

CERTIFIED FIXTURES FOR FLUORESCENT LIGHTING

Participation in the FLEUR-O-LIER MANUFACTURERS' program is open to any manufacturer who complies with FLEUR-O-LIER requirements

When writing Fleur-O-Lier Manufacturers please mention Purchasing

HUSSEY COPPER
GOES WHERE
VITALLY NEEDED TODAY!

HUSSEY

Every shell casing from a .30-caliber bullet to the big 105 mm. shell,—consists of at least 70 per cent copper.

In order to emerge victorious from this war we must *produce* and *use* ammunition in heretofore unbelievable quantities. *How much* copper can be supplied will possibly determine *how soon* victory is won.

HUSSEY COPPER,—a true Victory Metal,—is being devoted 100% to our arms program today.

C. G. HUSSEY & COMPANY
(DIVISION OF COPPER RANGE CO.)
Rolling Mills and General Offices • PITTSBURGH, PA.
Warehouses in Principal Cities

Continued from Page 220

use of non-ionic wetting agents. The sponsor is the Glyco Products Co., Inc., of Brooklyn, and the incumbent for 1943-44 is S. Eichel.

Stanton Hertz, vice president and assistant to the president of the Copperweld Steel Co., Glassport, Pa., lost his life in a fire in his home in Pittsburgh, which also claimed the life of a 13-year old daughter. Mrs. Hertz and another daughter were critically injured.

Willard Storage Battery Co., Cleveland, has established a modern aluminum castings foundry which is now in production on heat-treated aluminum aircraft castings.

William J. McIlvane has been made Vice President in Charge of Sales and assistant to the president, Copperweld Steel Company, Glassport, Pa. He was formerly general manager of sales.

Fred E. Garner Company of Chicago announces the opening of Plant No. 2 at 1100 West Washington St., that city. The engineering staff will be located at the new plant. The general offices will remain at 43 E. Ohio Street.

Gene P. Roberts has been named advertising manager of the Weatherhead Company, Cleveland, succeeding Robt. H. Weatherhead who is with the armed services.

S. B. Taylor, Works manager of the Reliance Electric & Engineering Co., Cleveland, has been elected a vice president of that company.

Handy & Harman of New York, fabricators of silver and gold alloys, announce the opening of a Los Angeles office in the Bendix Building, 1206 So. Maple avenue. H. A. Folgner is in charge.

Dr. A. J. Cofrancesco has joined the technical staff of The Stanley Chemical Co., East Berlin, Conn., devoting his

Continued on Page 224

It Brings Your Machines Right Into Your Office . . .

. . . so You Can See their Production from Minute to Minute

You can see what each machine is doing *right now* . . . when Veeder-Root Magnetic Counters "televise" operating figures to your office from your plant, no matter how far distant. These remote-indicating counters give you a continuous newsreel of production progress . . . give you closer and more accurate control without waiting for written reports. And you can have these instruments grouped in any number, on a centrally located panel. Today, when time is the essence of Victory, Veeder-Root can help you . . . in this and many other ways . . . to make every war-production minute count for more than ever before.

Veeder-Root Inc.
HARTFORD, CONNECTICUT

When writing Veeder-Root Inc. please mention Purchasing

OAKITE WARTIME SERVICE IS AVAILABLE WITHOUT CHARGE
TO ANY PLANT WORKING ON WAR ORDERS
Nation-Wide
OAKITE CLEANING
Field Service Staff

Supplies and Service For Your Maintenance Needs!

To effectively meet your wartime needs, Oakite cleaning materials for expediting equipment maintenance and plant sanitation are stocked in principal cities across the Nation.

Remember, too, that the specialized knowledge, wide experience and personal service of Oakite Technical Representatives are freely available in helping you solve any wartime plant housekeeping or hygiene problem. Get in touch with us today . . . there's no obligation, of course.

OAKITE PRODUCTS, INC.
54 Thames Street, NEW YORK, N. Y.
Technical Service Representatives Located in All Principal Cities of the United States and Canada

OAKITE SPECIALIZED CLEANING

NEW LABOR FORCE

. . . New standards of sanitation and plant hygiene. To plants using PAX Safety Industrial Skin Cleanser, the changeover will be simple. PAX is so mild and bland BOTH men and women use it! PAX keeps workers' hands flexible, healthy and productive. It will not dry-out the skin!

Lanolin? Yes indeed! PAX formulas have used lanolin for 18 years. PAX suds profusely! Cost? About ½¢ per worker per week!

PAX
2040 Walnut, Dept. P St. Louis, Mo.

ARMSTRONG-BRAY
STEELGRIP
FLEXIBLE BELT LACING

Prompt Delivery!

—on both standard types of belt lacing.

STEELGRIP that is applied with a hammer that penetrates belting easily and clinches securely to make a strong, flexible, smooth joint. 2-piece hinged rocker pins take up wear. In boxes or long lengths for wide belts, it compresses belt ends and prevents fraying. 8 sizes.

BELT HOOKS

Applied with any standard make lacing machine, these belt hooks come on double (patented) aligning cards that hold hooks in perfect alignment and prevent card end waste. 6 sizes.

ARMSTRONG-BRAY & CO.
"The Belt Lacing People"
5378 Northwest Highway Chicago, U.S.A.

(Continued from page 222)

efforts to the field of synthetic chemistry and the development of rubber-like materials.

B. R. Sherrell has been made general manager of the aircraft division of the Willys-Overland Motors, Inc., Toledo.

D. H. O'Brien, vice president, Graybar Electric Co., Inc., New York, has retired to head new Field Service Division of the U. S. Signal Corps. His new address is Pentagon Building, Washington.

Albert D. Wilson, president of the Bristol Brass Corp., Bristol, Conn., has been named chairman of the board, and Roger E. Gay, first vice president, has been named president.

Leland H. Hogan is now Eastern district manager, New York, of the American Welding & Mfg. Co., Akron, Ohio. F. L. Schneider is Chicago District Manager with headquarters in that city. Carl I. U. S. Signal Corps. His new address is Laraway, comptroller of operations and Frank J. Shanaberg, manager of product development.

Plan-O-Mill Corporation, formerly of Royal Oak, Mich., is now located at 1511 East 8-Mile Road, Hazel Park, Mich., a suburb of Detroit.

J. P. Enright has been appointed abrasive engineer for the Indianapolis territory by the Norton Co., Worcester, Mass., and Robert W. Crawford has been appointed abrasive engineer in the Pittsburgh territory.

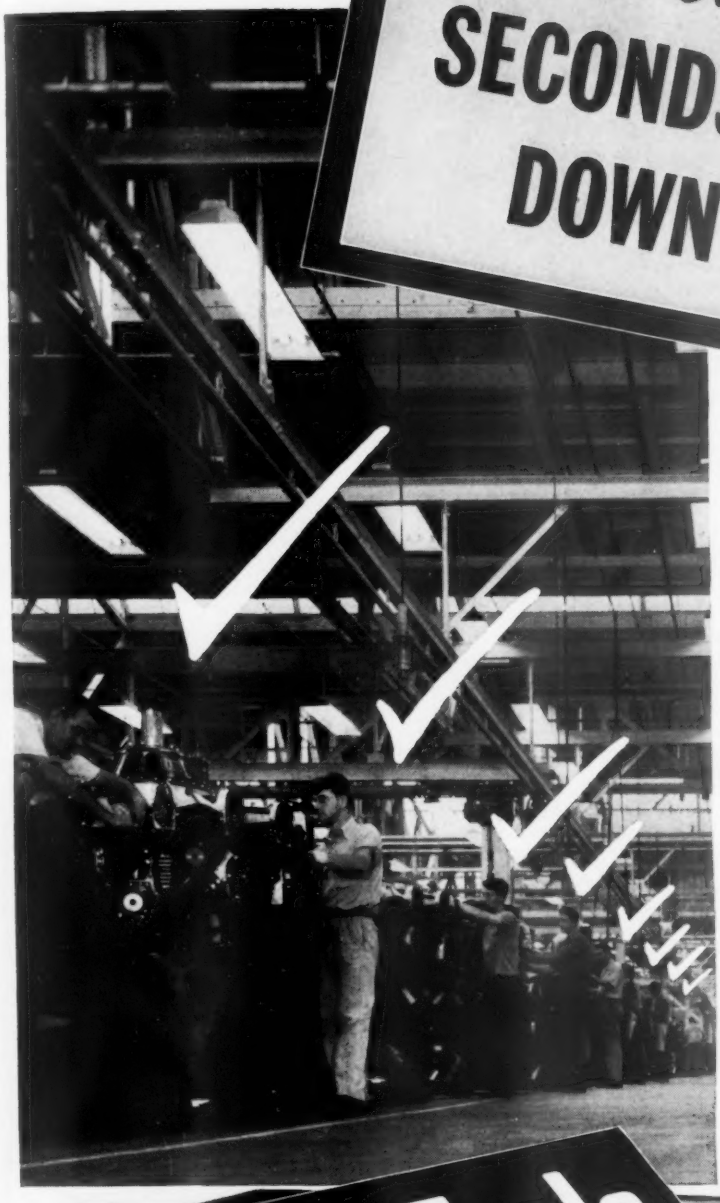
United Precision Products Co., Chicago, has moved into new quarters at 3524 West Belmont Ave., that city. This marks the company's third removal to larger quarters in the last five years.

Marvin J. Alef is manager of the bullet core division of the Willys-Overland Motors, Inc., having been promoted from executive position of assistant to President Joseph W. Frazer.

H. Tom Collard, of Protective Coatings, Inc., Detroit, has contracted to represent the Mitchell-Bradford Chemical Co.,

(Continued on page 226)

Saving PRICELESS SECONDS . . . STRAIGHT DOWN THE LINE!



On every hand tool operation . . . *check and double check* . . . to make sure that the *right* tool, the *fastest* tool, is on the job. Worn tools, "slow tools" . . . tools poorly adapted to each specific application . . . waste time, skill, energy.

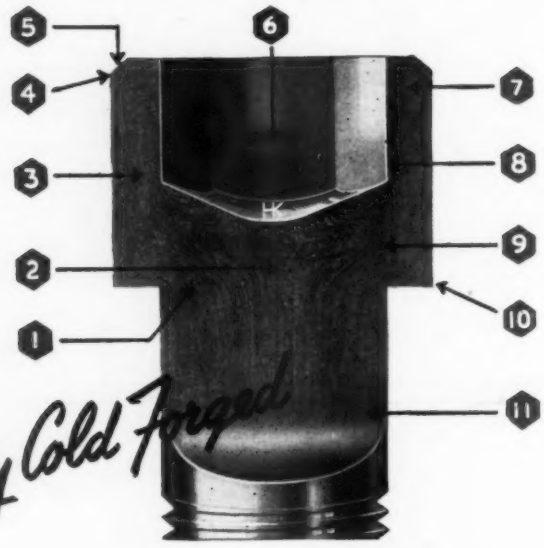
Straight down thousands of busy production and assembly lines Snap-on tools are the stand-out choice for speed, adaptability, accuracy. Their ease of application, solid grip and powerful leverage save time and energy, help promote a smooth, uninterrupted flow of work.

Eliminate the "bottle neckers" . . . replace with Snap-ons. 3000 modern Snap-on tools offer a wide selection for production and maintenance needs. Distributed through 35 factory branches located in key production centers. Write for catalog and address of nearest branch.

SNAP-ON TOOLS CORPORATION
8048-D 28th Avenue KENOSHA, WIS.

When writing Snap-On Tools Corporation please mention Purchasing

UNRETOUCHED PHOTO ETCHED CUTAWAY
HOLO-KROME SOCKET HEAD CAP SCREW



Completely Cold Forged

1—INCREASED STRENGTH.
2—CONTINUOUS UNCUT LATERALLY DEFLECTED CORE FIBRES.
3—CONTINUOUS UNBROKEN FIBRES.
4—SMOOTH FLAT TOP WITH SLIGHT CHAMFER.
5—CONCENTRICITY OF HEAD WITH BODY.
6—SOCKETS — UNIFORMLY ACCURATE TO FULL DEPTH OF HOLE — TRUE SECTION DIAMETER IDENTICAL TOP AND BOTTOM — NO TAPER — SMOOTH REGULAR WALLS — WELL DEFINED CORNERS.
7—CONTINUOUS FIBRES ENDING IN SOCKET WALLS.
8—RE-ENFORCED SOCKET WALLS.
9—CONTINUOUS UNCUT FIBRES.
10—SQUARE SHOULDERS.
11—ORIGINAL CONTINUOUS FIBROUS STRUCTURE.

THE RESULTS OF A SUPERIOR METHOD PATENTED AND EXCLUSIVELY USED BY HOLO-KROME

HOLO-KROME FIBRO FORGED SOCKET SCREWS

THE HOLO-KROME SCREW CORP., HARTFORD, CONN., U.S.A.

(Continued from page 224)

Bridgeport, Conn., in Michigan, the far West and in other territory.

Floyd A. Ferguson, former member of the Westinghouse headquarters treasury staff at Pittsburgh, has been appointed treasury-manager of the company's electric appliance division with headquarters at Mansfield, Ohio.

The B. F. Goodrich Company announces receipt of the largest single order for conveyor belt ever written in the history of the rubber industry—66 miles, part of a huge war order.

Henry J. Hogue has been promoted to the position of vice president of the Wasmer Bolt & Screw Corp., Cleveland. He was formerly general superintendent.

OPENS ALUMINUM CASTINGS PLANT

The Majestic Company, Huntington, Indiana, manufacturers of metal building necessities, recently put into operation a new plant, located in that city, for producing aluminum castings by a special permanent mold process. The new company will be known as The Majestic Aluminum Company. The new process being used produces castings of high tensile strength, greater elongation and finer finish. Alloys used by this process are heat treatable and the company has complete facilities for heat treating. The officials and executive staff is the same as the parent organization.

WAR PRODUCT FINISHING COURSES AT DEVILBISS SCHOOL

Wartime finishing methods are the keynote of the first half 1943 schedule of the DeVilbiss Training School for industrial spray operators announced by The DeVilbiss Company, Toledo, Ohio.

Sessions start on April 19th, May 17th, and June 21st and continue for one week periods. Classes are open to all users of DeVilbiss Spray Painting Equipment. There's no tuition fee—no obligation on the part of the individual or the firm represented.

The training course will include class and shop instruction in the use and care of equipment and other phases of wartime finishing practices.

RUBBERLESS ELECTRIC WIRE

The National Electric Products Corporation of Pittsburgh announces a revolutionary new type of electric wire for wartime building with all critical materials deleted from the covering, leaving only the copper conductor itself of a vital nature. Most building wire has for many years been coated with tin and wrapped in rubber and a considerable volume of these materials was used every year in wire production.

According to I. A. Bennett, National Electric vice president, research was started shortly after Pearl Harbor to find a non-critical wire covering which would conform to the stringent requirements

(Continued on page 228)

FOR *BIG SAVINGS* IN FLUORESCENT USE G-E FORLAMP BALLASTS

They saved 76 tons of critical materials and $72,000 at one bomber plant.

A LARGE Midwestern bomber plant decided to install 100-watt fluorescent lighting. Preliminary designs and estimates called for 24,000 Tulamp ballasts and fixtures. Then a lighting contractor suggested the use of the revolutionary new G-E Forlamp ballast, which operates four 100-watt fluorescent lamps. Investigation showed that circuit voltages necessary to operate this ballast were available.*

Because Forlamp ballasts were chosen instead of Tulamp (previously the most economical ballast hookup available), only half as many ballasts were needed. Also, since the price of the Forlamp ballast is ***exactly the same*** as that of a Tulamp, estimated ballast costs were cut 50 per cent! Here's the record of savings *on ballasts alone:*

Copper . . . . . 30,000 lb	**Aluminum . . . 4140 lb**
Iron and Steel . . 118,000 lb	**Dollars 72,000**

In addition, utilization of the higher-voltage circuits necessary for the operation of the Forlamp ballast resulted in substantial copper savings in plant wiring.

Savings like these are possible wherever circuits are in the 265/460Y-volt class—in new war plants, or in older plants converting to war work where circuit voltages can be raised to necessary levels with autotransformers or insulated transformers.

**Forlamp ballasts operate within the voltage range of 250 to 280 volts, and should never be used where circuit voltages at any time drop below 250 volts.*

Save Installation Time, Too

The Forlamp ballast is easier to install—only one ballast to handle, instead of two, per four lamps operated. Fewer leads—three instead of eight—simplify connecting. Over-all fixture weights are reduced, resulting in additional material savings. Power factor is 95% or above.

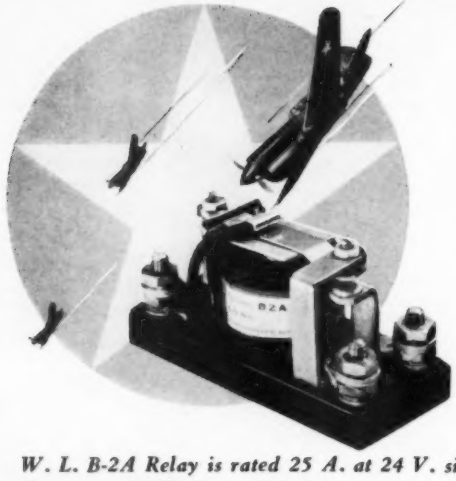
Ask your G-E representative about the new Forlamp ballast, or write for Bulletin GES-3033.

General Electric Company, Schenectady, N. Y.

GENERAL ELECTRIC

408-13-5205

BUILT FOR THE AIR SERVICE



W. L. B-2A Relay is rated 25 A. at 24 V. single pole, single throw, normally open contacts.

When Ward Leonard developed their B-2A Relay to meet the Army Air Corps tests for vibration and acceleration, they went further than required. They incorporated features in it not found in any other relay.

Yes, this relay is used on aircraft, but the very features that make it desirable for airplane use make it equally desirable for any purpose when a rugged, positive, crisp acting relay is required. Send for bulletin.

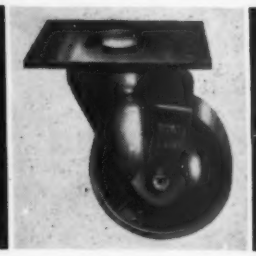
WARD LEONARD

RELAYS • RESISTORS • RHEOSTATS

Electric control (WL) devices since 1892.

WARD LEONARD ELECTRIC CO., 50 SOUTH ST., MOUNT VERNON, N. Y.

DARNELL CASTERS



will pay for themselves many times over. Made in nearly 4000 types for every industrial use. Investigate today.

DARNELL CASTERS & WHEELS KEEP TURNING and EARNING

DARNELL CORP. LTD.,
LONG BEACH, CALIFORNIA.

60 WALKER ST., NEW YORK, N. Y.
36 N. CLINTON, CHICAGO, ILL.

NEW TRUCKS FROM OLD

The reinforced construction of Fairbanks Platform Trucks makes them a veritable fortress for strength and durability.

Even if they become damaged from rough handling, one or all platform boards can be easily and cheaply replaced by removing a few bolts. No welding or cutting is necessary.

Racks, handles and wheels also can be replaced or changed.

Made in styles and sizes for practically every service. Write for catalog No. 51.

THE FAIRBANKS COMPANY
22 East 4th Street, New York, N. Y.
Boston, Mass., Pittsburgh, Pa.

Fairbanks
PLATFORM TRUCKS

(Continued from page 226)

of fire and moisture resistance necessary for building wiring. Mr. Bennett stated that some months ago, the new insulating material together with a specially treated paper was developed. It seemed to do the job as well as any tin and rubber combination, and after exhaustive tests, the resultant rubber-less wire is now ready for general distribution.

NEW MAGNETIC MATERIAL

Hipersil is the trade style of an iron silicon combination devolped by Dr. Sidney Siegel, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., that is said to be one third better than any conductor of magnetism used previously in transformers. Use of this new product is said to make possible huge savings in weight of transformers. The weight of a typical large transformer has been reduced from 303,000 pounds to 266,800 pounds, a saving of more than 18 tons of steel, copper, and oil and insulating materials. Fifty tons of steel and nine tons of copper are said to have been saved by the use of Hipersil in the construction of two 264-ton transformers.

PROCESS FOR MAKING SYNTHETIC STEEL

Through the purchase of outstanding stock of the Bi-Metallic Products Corporation, Chicago, the General Finance Corporation of that city has acquired a process for converting non-critical materials to a metal claimed to have approximately the characteristics of hardened tool steel at a cost considerably below that of the latter. Frank G. Buffum, inventor of the process has been elected vice president of the subsidiary company. L. H. Erickson is president.

CONTINENTAL CAN ACQUIRES THE CONTAINER COMPANY

Announcement has been made of the purchase by Continental Can Company, Inc., of the entire capital stock of The Container Company of Van Wert, Ohio, under date of December 30th, 1942.

The assets and business will be merged with those of Continental Can Company, Inc., and the present business continued at the Van Wert plant. There will be no change in management, personnel or policies.

The Container Company is engaged in the manufacture of fiber drums and barrels for the packing of chemicals and food-stuffs.

CLAIM SATISFACTORY SUBSTITUTES FOR FUSE & BOOSTER PRODUCTION

Research Laboratories of the Philco Corporation, Philadelphia, have developed substitute steel for brass, aluminum, and copper, and press work for machine operations in the manufacture of M-48 and M-51 artillery fuses and boosters for the Army, which it is claimed make possible the annual saving of 54,505,800 pounds of the non-ferrous metals, at present rates of production.

EGGS FOR BERLIN

Laid with **Rubber**

HIGH explosives of modern warfare are being produced in great quantities for both demolition and propellent use. In these arsenals and in the contributing chemical industries many manufacturing operations are found to be dependent upon mechanical rubber products.

Specialized chemical resistant hose, pump valves, gaskets and packing help produce accessory sulphuric and nitric acids used in the production of explosives. Conveyor belting for sulphur bearing ores, pneumatic and hydraulic hose, acid resisting belts and rubber linings for chemical tanks are all vital rubber requirements. Static conducting conveyor and transmission belting in loading plants and static conducting floor matting eliminate dangerous explosive hazards.

Bringing its wealth of experience in producing mechanical rubber products to the war effort, Republic is devoting its many facilities to furnishing the nation's arsenals, its chemical plants and other industries with necessary items made from crude rubber, synthetics and reclaimed rubber. Until "unconditional surrender," that is Republic's total job.

Accredited Distributor

Republic Distributors are providing invaluable service to industry engaged in the war production program—offering an organized service and saving time and trouble on equipment maintenance problems.

THROW YOUR SCRAP INTO THE FIGHT

WE ARE PARTICIPANTS IN THE OWNERSHIP AND OPERATION OF NATIONAL SYNTHETIC RUBBER CORPORATION

REPUBLIC RUBBER

YOUNGSTOWN • • • OHIO

HOSE • BELTING • MOLDED GOODS • PACKING • EXTRUDED PRODUCTS

DIVISION OF

LEE RUBBER & TIRE CORPORATION

PERSONALITIES *in the* NEWS

C. V. Nelson has been named Director of Purchasing of General Mills, succeeding Sewall D. Andrews, Jr., who is now in Washington.

Donald H. Lyons has been appointed Convention Committee Chairman of the New York Association for the N.A.P.A. Convention.

Fred Webb, Purchasing Agent of the Connecticut Light & Power Company, Waterbury, Conn., is chairman of the local ration board's fuel oil panel.

J. E. McHale of the Purchasing Department, The Texas Company, Houston, has been made a buyer in the purchasing organization of War Emergency Pipelines, with headquarters in Cincinnati, Ohio. Here he will be associated with Harry Lingle, Humble Pipe Line Co., Purchasing Agent for the War Emergency Pipelines.

Clement W. Wallance of the Purchasing Department of the Mid-Continent Petroleum Corp., Tulsa, Okla., was recently given a twenty-year service award by his company.

Ralph R. Kimes is the new general manager of Aircraft Tools, Inc., Los Angeles, Calif. Previously, Mr. Kimes was associated with Douglas Aircraft at Santa Monica as Purchasing Agent of all non-productive material for the three West Coast plants of Douglas.

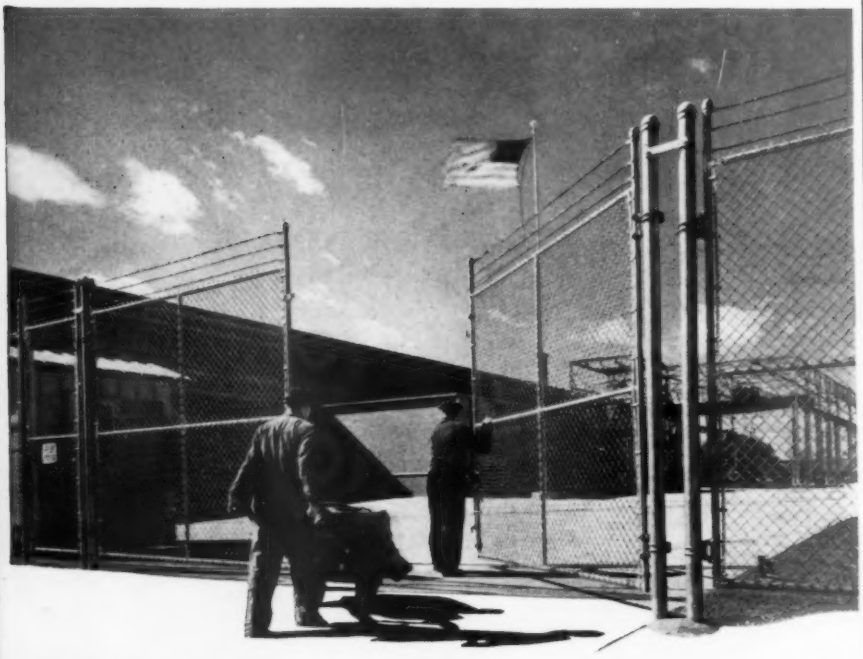
Fred Holmens has been appointed Purchasing Agent for the Lynn B. Emery Company, Detroit, Mich.

Charles S. White, formerly general Purchasing Agent, New York Central System, has been appointed manager, Purchases and stores, with headquarters in New York.

Earl Crawford, formerly Assistant Purchasing Agent, Conley-Lott-Nichols Company, Houston, Tex., has become associated with the firm of C. Stewart Spitler

PAGE FENCE

America's First Wire Fence — Since 1883



Whose Fence Lasts Longest?

● That logical question has a logical answer. If it's a Page Fence it was designed, manufactured and erected to render extra long service. But the protective life of this or any other chain link fence can be extended by experienced, Page-trained service men. The quality fence that is inspected and serviced expertly will last longer. You may not be able to replace your fence until after Victory has been won. Care for the one you have. Send for FENCE FACTS and name of Association member nearest you. He is qualified to serve you now and help you plan for the future. Write to PAGE FENCE ASSOCIATION, Headquarters: Monessen, Pennsylvania.

PRODUCT OF PAGE STEEL & WIRE DIVISION — AMERICAN CHAIN & CABLE COMPANY, INC., BRIDGEPORT, CONN.

When writing Page Steel & Wire Division please mention Purchasing

& Crawford, distributors of construction material and supplies, and plumbing and heating equipment. Address of the new firm is P. O. Box 1889.

E. W. Walther has been appointed acting Assistant Purchasing Agent for the Baltimore & Ohio Railroad, with headquarters in Baltimore, vice H. P. McQuilkin, who has been granted leave of absence for service with the War Department.

Stuart F. Heinritz, Editor of PURCHASING, addressed recent meetings of the Kiwanis Club at Yonkers, N. Y., and the Rotary Club of Springfield, Mass., on the topic, "Red Tape Must Go!"

E. A. Leaverty, Purchasing Agent of Metal & Thermit Corporation, has been made General Purchasing Agent for the entire organization, including the plants

at Jersey City, Carteret and Piscataway, N. J., and East Chicago and South San Francisco. He has been with the corporaation since 1906. His headquarters will remain in the New York offices at 120 Broadway.

Leo. L. Siskind, formerly Purchasing Agent for J. S. Bache & Company, New York, is organizing a new concern to act as buying agents for brokers, banks and other financial institutions. The company will be known as Office Supplies Service Co., and will be located at 40 Wall Street, New York. It will specialize in designing and placing orders for office forms, statistical literature, house organs, etc.

E. Maxwell Robbins has been named office manager and Purchasing Agent of the Minute Tapioca Company, Orange, Mass., replacing Alfred J. Foster who recently resigned. Mr. Robbins was formerly connected with the Purchasing Department of the Walter Baker Company.

Charles M. Healy, Jr., Purchasing Agent for the City of Springfield, Mass., recently addressed a meeting of the Knights of Columbus in that city on the history and origin of his department in city government. He stated that the city has no priority ratings higher than the most ordinary citizen excepting for such divisions as water, sewage and waste collection.

Max Lanford, Purchasing Agent, West Texas Utilities Company, Abilene, Texas, has been elected president of the Kiwanis Club of Abilene, and was inducted into

office at a recent meetting in the Wooton Hotel. He has been with the Utilities Company since 1925, most of the time in the Purchasing Department. He was made Purchasing Agent in 1939.

Lorne C. Thomson, Manager of Stores, Canadian National Railways, liason officer, Canadian Department of National Defense, has been appointed director general of Naval Stores for the Dominion of Canada.

Albert L. Muller has been appointed District Purchasing Agent for the Monroe, Mich. plant of the Aluminum Company

of America. He formerly served in the home office Purchasing Department at Pittsburgh, and later was district Purchasing Agent for the Troutdale, Oregon plant.

Jesse B. Noyes, Purchasing Agent and General Storekeeper of the Minneapolis,

(Continued on page 232)

Ready to Produce ALL SMALL PARTS for:

- Communication Units
- Electrical Controls
- Aircraft Components
- Ammunition Boxes
- Hose Clamps
- Bomb Releases
- Ordnance Items
- Marine Equipment

★ Centralize your procurement of fasteners and small "cold upset" parts at Central Screw Company. Examine the Central products shown above. These and many more are used extensively for vital armament assemblies.

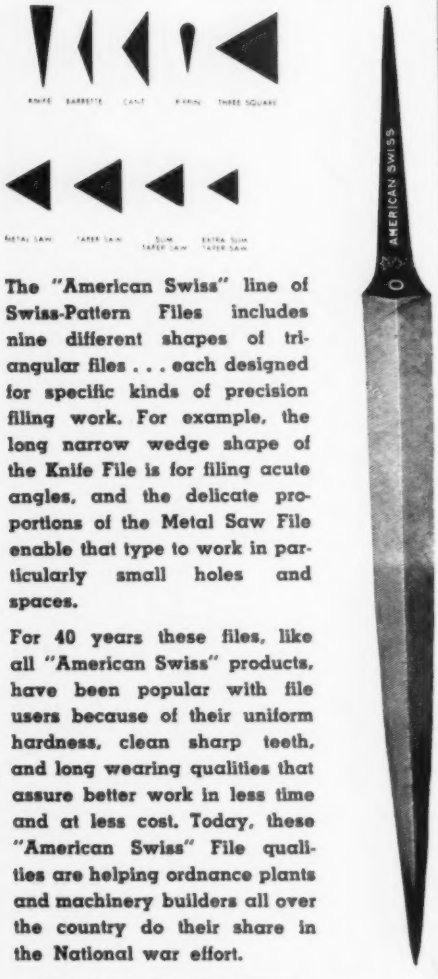
Absolute uniformity in size, shape and quality will speed assembly of finished products that invite rigid inspection. Let Central show what this dependable uniformity and accuracy can mean to you. Send your specifications to Central for prompt action.

CENTRAL SCREW COMPANY

3515 Shields Ave., Chicago, Ill.

When writing Central Screw Company please mention Purchasing

HOW MANY *Triangular Files* DO YOU KNOW?



The "American Swiss" line of Swiss-Pattern Files includes nine different shapes of triangular files . . . each designed for specific kinds of precision filing work. For example, the long narrow wedge shape of the Knife File is for filing acute angles, and the delicate proportions of the Metal Saw File enable that type to work in particularly small holes and spaces.

For 40 years these files, like all "American Swiss" products, have been popular with file users because of their uniform hardness, clean sharp teeth, and long wearing qualities that assure better work in less time and at less cost. Today, these "American Swiss" File qualities are helping ordnance plants and machinery builders all over the country do their share in the National war effort.

Buy from Our Distributor

AMERICAN SWISS FILE & TOOL CO.
ELIZABETH, N. J.

FILES — ONLY THE BEST GOOD ENOUGH — TOOLS

ASK FOR THEM BY THIS NAME

American Swiss

SWISS PATTERN FILES

(Continued on page 231)

St. Paul & Sault Ste. Marie, Duluth, South Shore & Atlantic and the Mineral Range Railroads has retired after 42 years' of service.

E. B. Orchard has been appointed Purchasing Agent for the Operating Division of the United Gas Corp., with offices at Houston, Texas, vice P. A. Leach who is now in charge of the Auditing Depart-

ment. Mr. Orchard has been connected with United Gas since 1934, and prior to his recent appointment was in charge of the Priorities Department at the General Office. He will continue to supervise the priorities work in addition to his duties as Purchasing Agent.

Alvin A. Borgading, who was appointed Purchasing Agent of American Car and Foundry Company last December, has now been appointed General Purchasing

Agent for the company. George W. Brown who has been Assistant Purchasing Agent since 1939 is now Purchasing Agent of A. C. F., and Herbert Streader, Assistant Purchasing Agent, has been appointed Assistant General Purchasing Agent.

L. S. Harris, Jr., Electric Writing Machine Manager in the Philadelphia office of International Business Machines Corp., has been "loaned" to the Government as head of a Typewriter Purchasing Dis-

(Continued on page 234)

SAFETY
(Reg. Trade Mark)
WEDGE GRIP RADIUS HOLDER

For marking around circumference of shell forgings, bars, tubes, and other round pieces.
Adjustable for stamping on different size radii.
Safety Steel construction eliminates spalling and mushrooming.

Write for circular

M. E. CUNNINGHAM CO.
154 E. Carson St. Pittsburgh, Pa.

DO YOU USE WIRE CLOTH?

Objective
- **Uniform Workmanship**
- **Economical Production**
- **Deliveries on Schedule for your requirements**

OR WIRE CLOTH PRODUCTS?

Solution
- **We Draw the Wire**
- **Weave the Cloth**
- **Fabricate the Product in one continuous line**

Send Michigan Your Inquiries

MICHIGAN WIRE CLOTH COMPANY
2100 HOWARD • DETROIT

GET *More* MAN-HOURS

Out of Present Floor Space, Men and Machines

3-Shift Work Bench

Tool Cases

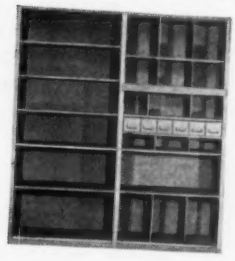
Bench Legs

Tool Stand

Style "L" Nesting Materials Handling Containers

★ Results in war plant after war plant prove that Lyon Shop Equipment and Lyon Storage Equipment can contribute a lot in the battle of production . . . packing more work into every hour. They add to employee efficiency by speeding up the handling of tools and parts . . . by increasing the productive value of available floor space . . . by providing the protection and efficient working conditions the workers need for maximum output . . . by reducing hazards, loss of and damage to vital tools. Mail coupon for catalogs.

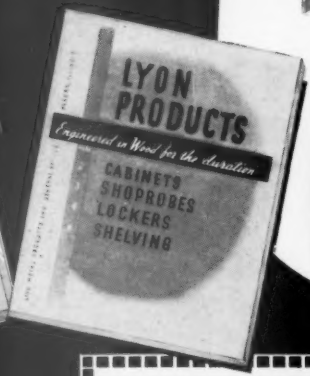
Shoprobe
(Pat. No. 2-202-427)



Shelving—Open and Closed Types
(Pat. Applied For)

Storage, Wardrobe and Combination Cabinets

Single and Double Tier Lockers



LYON

METAL PRODUCTS, INCORPORATED

General Offices: 3304 Madison Avenue, Aurora, Ill.

Branches and Distributors in All Principal Cities

LYON METAL PRODUCTS, INCORPORATED
3304 Madison Avenue, Aurora, Illinois

Send ☐ Lyon Shop Equipment Catalog;
☐ Lyon Storage Equipment Catalog.

Name _____

Address _____

City _____ *State* _____

QUALITY COUNTS Now More Than Ever

Quality in valves has always been synonymous with the name "Lunkenheimer" and through the years Lunkenheimer Quality has been the standard by which good valves are judged. Constant improvement and refinement have kept Lunkenheimer abreast of every-changing conditions.

When unprecedented demands arose to produce essential war equipment for the Army, Navy, Maritime Commission and Air Force, Lunkenheimer facilities naturally were called upon to provide necessary valves, boiler mountings, lubricating devices and aircraft fittings. And now, with the entire productive capacity devoted to war work, less important requirements must be deferred.

However, when post-war conditions come, Lunkenheimer will be ready to meet the demands of constantly changing processes for advanced designs of improved quality for every industrial application.

The complete facilities of Lunkenheimer distributors are at your service. They'll go all out to help you get the things you need. Ask for a copy of Catalog 78.

ESTABLISHED 1862
THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U. S. A.
NEW YORK CHICAGO
BOSTON PHILADELPHIA
EXPORT DEPT. 318-322 HUDSON ST., NEW YORK

125 lb. S.P. Bronze Gate
Double Wedge Disc
Rising Stem

125 lb. S.P. Bronze Gate
Single Wedge Disc
Non-Rising Stem

BRONZE, IRON, STEEL AND CORROSION RESISTANT ALLOY VALVES, 125 TO 2500 LB. S.P.;
BOILER MOUNTINGS, LUBRICATING DEVICES, AIRCRAFT FITTINGS

(Continued from page 232)

trict. He will maintain headquarters in Philadelphia, and will have charge of Eastern Pennsylvania, Southern New Jersey, Delaware, Eastern Maryland and Virginia.

Herbert W. McKeague, formerly assistant Purchasing Agent in the Westinghouse Electric & Manufacturing Company's radio division at Baltimore, has been appointed Purchasing Agent in the transformer division of the company's Sharon Works. He joined Westinghouse in 1940 as buyer and assistant Purchasing Agent in the radio division.

Alfred W. Rooks has been appointed Purchasing Agent for the Kinner Motors,

Inc., 635 W. Colorado Boulevard, Glendale, California.

Andrew H. Phelps, vice president in charge of Purchases and Traffic for the Westinghouse Electric & Mfg. Co., recently received the Westinghouse Order of Merit for exceptional service to the electrical industry and to his company in wartime. The Order of Merit Medal is a silver W on a bronze background.

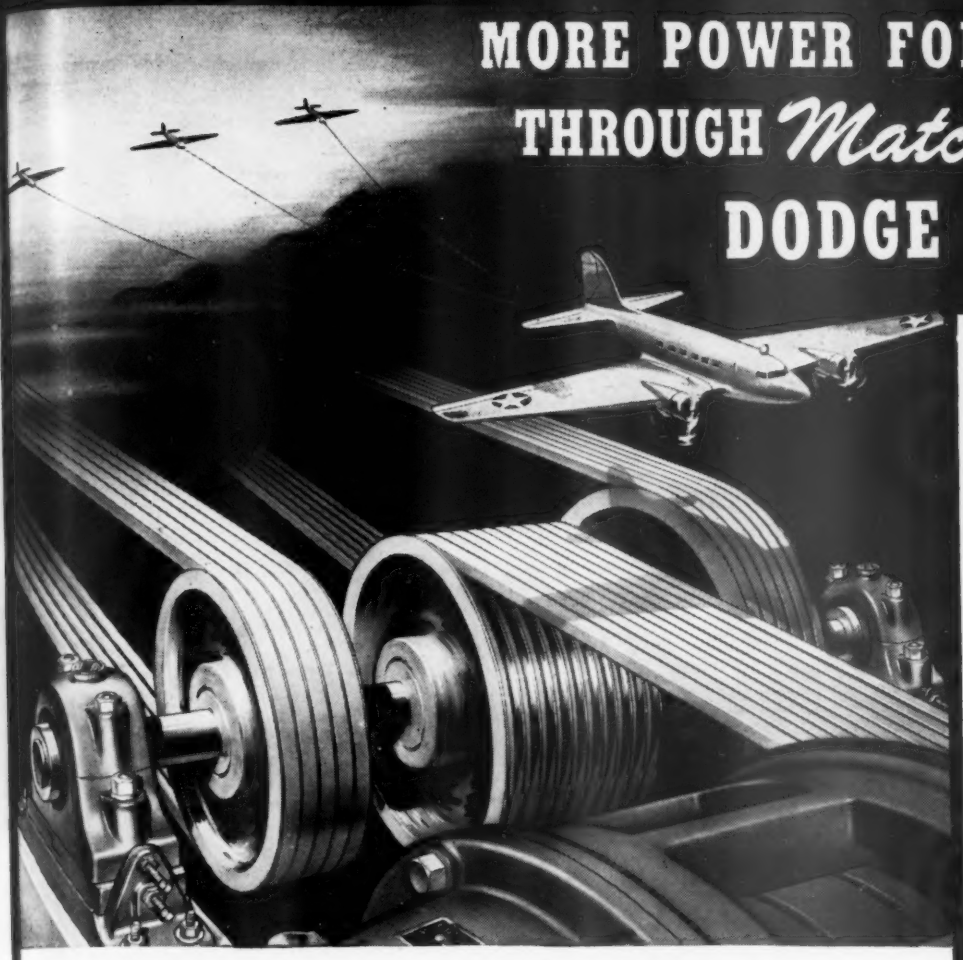
William A. Cushing Purchasing Agent for the Great Atlantic & Pacific Tea Company for the past 17 years at Columbus, Ohio, has been transferred to the Syracuse, N. Y. office to succeed David S. Ludlum as Purchasing Agent.

John Bradfield, vice president, International Industries, Ann Arbor, Mich., has been made director of Purchases, and Francis Carl has been named Purchasing Agent for Plant No. 1. Earl C. Allmand, Purchasing Agent for Plant No. 1 for the last five years has taken an executive position with Lear Avia, Inc., Grand Rapids, Mich.

H. A. Sallander, Purchasing Agent of the American Smelting and Refining Co., Omaha, has retired after 35 years with the company. He was presented with

(Continued on page 236)

MORE POWER FOR VICTORY THROUGH *Matched-Quality* DODGE D-V DRIVES



Matched to Get More *Battle Power* Out of Horsepower

In thousands of war production power transmission installations, Dodge Matched-Quality D-V Belts and Sheaves are delivering maximum developed horsepower to the point of production, to create more *battle* power and hasten Victory. Because sound engineering is combined with precision manufacturing, Dodge Matched-Quality D-V Drives have proven efficient, economical and able to stand the punishing 'round-the-clock performance demanded today.

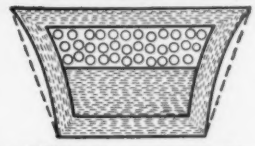
You Get These *Advantages* In Dodge D-V Matched Drives

1 — Sheaves (in metal or "Victory" wood) have precision groove diameters, matched with D-V Belts, for uniform belt tension; each belt pulls its share. 2 — D-V Belts have concave sidewalls which, when flexed around sheave, form straight surface for full contact with flat sides of grooves; full transmission of power; longer belt life. 3 — Clean, noiseless drives, requiring no lubrication of any kind . . . no oil leakage or throwing of lubricant to damage work or rot belting. 4 — D-V Belts, cured under tension, require no adjustment, last longer; won't sag or slip. 5 — Matched sheaves and D-V Belts form complete modern power transmission unit backed by one responsibility: DODGE!

See Your Local Dodge Distributor or Write For Data to

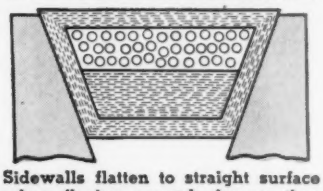
DODGE MANUFACTURING CORPORATION, Mishawaka, Indiana, U.S.A.

ON THE STRAIGHT RUN



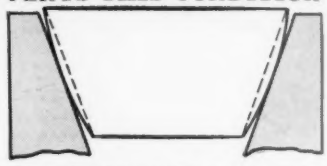
Dodge D-V Belts have concave sidewalls.

ON THE D-V MATCHED SHEAVE



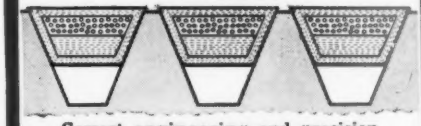
Sidewalls flatten to straight surface when flexing around sheave, thus providing full flat contact between belt sides and sheave-groove.

CONCAVE SIDEWALL PREVENTS THIS CONDITION



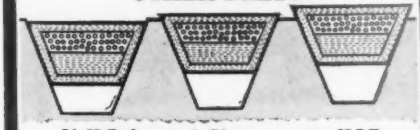
Sidewalls that are flat on the straight run, bulge in center as they flex around sheave, thus making only partial contact with groove, and causing undue wear.

EQUAL TENSION IN DODGE D-V BELTS



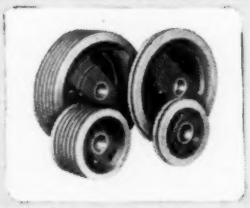
Correct engineering and precision manufacturing of both D-V Sheaves and D-V Belts ("Matched Quality") assure even tension on all belts of D-V Drives.

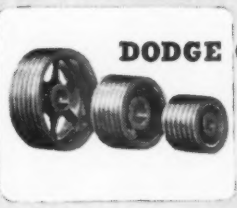
UNEQUAL TENSION IN OTHER BELTS



If V-Belts and Sheaves are NOT matched, some belts will be too loose, others too tight; unequal tension means power loss and undue wear.

DODGE VICTORY WOOD *Matched* **D-V SHEAVES**





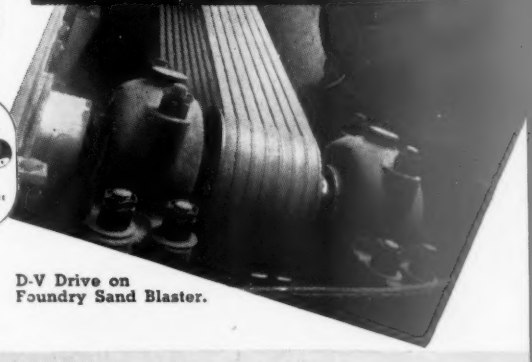
DODGE CAST IRON PRECISION *Matched* **D-V SHEAVES**

DODGE

MISHAWAKA

THROW ALL YOUR SCRAP INTO THE FIGHT! **BUY MORE WAR BONDS!**

THE RIGHT DRIVE FOR EVERY JOB



D-V Drive on Foundry Sand Blaster.

PUT *ALL* YOUR POWER IN THE JOB

LOWELL
SAFETY-STEEL
WRENCH

THE SAFE AND SURE REVERSIBLE RATCHET THAT WILL SAVE TIME AND MONEY

A New Handle for any broken one returned

MANUFACTURED BY
LOWELL WRENCH COMPANY
Worcester, Mass., U. S. A.

Screws

If it is a metal piece to insert by driving, turning or inset, we can make it (design it, if need be)—to exacting specifications and to a high degree of precision uniformity.

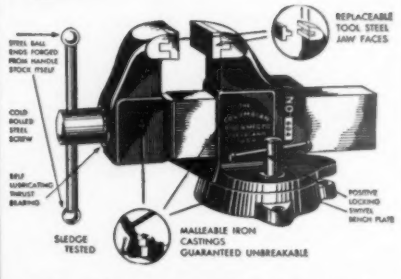
MACHINE SCREWS
SHEET METAL SCREWS
MACHINE SCREW NUTS
PLASTIC INSETS
HOLDING PINS
SPECIAL RIVETS

Economy of essential material governs all of our production. Ingenuity saves waste.

Inquiries Solicited

NEW ENGLAND SCREW CO.
KEENE, NEW HAMPSHIRE
INCORPORATED 1892

COLUMBIAN VISES
STEP UP
BENCH PRODUCTION


REPLACEABLE TOOL STEEL JAW FACES
STEEL BALL ENDS FORGED FROM HANDLE STOCK ITSELF
COLD ROLLED STEEL SCREW
SELF LUBRICATING THRUST BEARING
POSITIVE LOCKING SWIVEL BENCH PLATE
SLEDGE TESTED
MALLEABLE IRON CASTINGS GUARANTEED UNBREAKABLE

Columbian Vises make it easy for your workers to turn out BETTER bench work QUICKER. Columbian Vises are carefully machined to provide positive and accurate work on the most exacting jobs. They also provide additional capacity to take care of the heaviest work. See your nearest Columbian Distributor, he may be able to help you.

THE COLUMBIAN VISE & MFG. CO.
9029 Bessemer Ave. Cleveland, Ohio

★

(Continued from page 234)

an easy chair at a banquet given in his honor by his fellow officers and employees at the Prague Hotel, March 4th. He started with the company in 1907 as timekeeper, later being put in charge of supplies and cost accounts. He became local Purchasing Agent in 1920.

David H. Thomas, Purchasing Agent of the Utah-Idaho Sugar Company has been elected president of the Utah Manufac-

turers' Association, succeeding James W. Silver. He has been a director of the association for the past six years and recently was re-elected for a three-year term. He is also president of the Utah State Fair Board.

Harold de Wyk is now Purchasing Agent for the City of Dearborn, Mich., succeeding Earl L. Coleman who has returned to the purchasing department of the Ford Motor Company.

L. Carl Stevens has been promoted to the position of General Purchasing Agent of the Scott Paper Co., Chester, Pa.

Charles Sheldon, Purchasing Agent, Hood Rubber Company, Watertown, Mass., is one of the principal speakers at the 14th Annual Packaging Conference sponsored by the American Marketing Association, to be held at Hotel Astor, New York, April 13-16.

SMALL NUMBER OF MOTOR VEHICLES IN RESERVE

The low stage of the Nation's reserve pool of new commercial motor vehicles is reflected by the figures released by R. L. Vaniman, director of WPB's Automotive Division.

"Today, one year after establishment of the pool," said Mr. Vaniman, "we have exactly 57,573 commercial vehicles left in our reserve. The figure includes light, medium and heavy trucks, trailers and third axle attachments. To appreciate the

ASSISTANT PURCHASING AGENT — desires to make a change. Fifteen years past experience in general purchasing in machinery manufacturing field. Also thoroughly familiar with storerooms supervision and stock control.

depleted state of the reserve, the figure may be compared with production in a pre-war year (1939) of 710,496 trucks. The vehicles now remaining in the pool are being held for rationing for indirect military demands and only the most essential civilian requirements."

The vehicles remaining are in the hands of approximately 14,000 manufacturers, their branches, and distributors and dealers.

* * *

"A MOST UNUSUAL YEAR"

"This has been a most unusual year, and this report in addition to the statistical data contained herein, purports to indicate how a municipality can be and is affected by extraneous influences, and how it has operated thereunder", states H. F. Wagner, City Purchasing Agent, Cincinnati, Ohio, in his annual report for 1942. "When General Sherman described war in general, he must have had some foresight and appreciated the problems of the Purchasing Agent in attempting to secure supplies for a municipality under global war conditions", he continued.

"During the past six or seven years we have more or less become immune to the alphabetic concoctions to which we were exposed. C. W. A., F. E. R. A., P. W. A., W. P. A., and N. R. A., in retrospect seem innocuous vexations compared with this past year's developments such as OPM, OEM, WPB, OPA, ODT, PRP, CMP, etc., and we had had to almost resort to consuming the Vitamin alphabet in order to comply with all of the new regulations.

"All of this, along with priorities, rationing, conservation, limitation, and allocation, has involved a great deal of research, studying of abstruse regulations, submission of detailed reports and the execution of complicated forms and affidavits.

"We have almost reached the point where before opening the mail in the morning the entire staff pauses for two minutes in silent prayer for strength to face the new forms and regulations. Nevertheless, if all of this is necessary to win the war, we feel that our efforts have not been in vain.

"The Purchasing Agent has in many cases had to assume the role of a salesman having to actually sell a supplier on the idea of bidding and furnishing certain items to our city. The amount of paper work and correspondence required to consummate our purchases has more than trebled. It would be much simpler to list the materials now which are hard to obtain than those which are readily available."

Mr. Weber reports that it was necessary to solicit bids informally, waiving all legal requirements. He says that because of strict government regulations and conservation orders, the Purchasing Agent learned, by canvassing the regular sources of supply, that "it would not be possible to secure bids on these goods if we followed our established legal procedure, particularly for those items requiring future bidding." A letter was sent out re-

(Continued on page 238)

PROMPT DELIVERY for METAL Spinnings and Stampings

Specialists IN SUB-CONTRACTS FOR WAR WORK.

Enlarged Plant Facilities to handle all sizes, all metals and all shapes of Metal Spinnings, Metal Stampings, Deep Drawings, Power Brake Work, Spotwelding, Metal Finishing and Assembly Work.

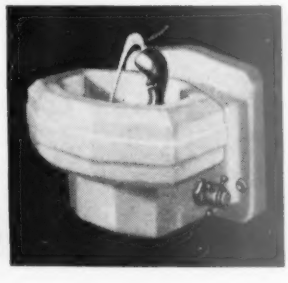
We understand how to do things in the best ways, *and in the fastest ways.* The rush jobs with which you favor us, however complex they may be, are handled precisely, yet as fast as your needs require. Call on us when your next work of this type comes up. You'll be glad you did!

Commercial Metal Products Co.
2253 W. ST. PAUL AVE., CHICAGO, ILL.
Phone Armitage 1123

... or EXECUTIVE

So much depends on maintained top-speed production that it is almost axiomatic to say plant personnel must be kept fit! • For the worker, clerk, stenographer, or key executive, Halsey Taylor Drinking Fountains and Coolers are an essential investment, providing a source of constant, health-safe drinking water at convenient points. Get our complete catalog of fountains for Industry!

THE HALSEY W. TAYLOR CO.
WARREN, OHIO

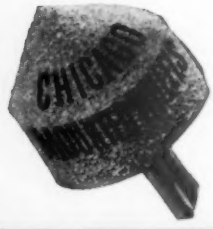


HALSEY TAYLOR
AUTOMATIC STREAM CONTROL • TWO-STREAM PROJECTOR
DRINKING FOUNTAINS

When writing advertisers please mention Purchasing

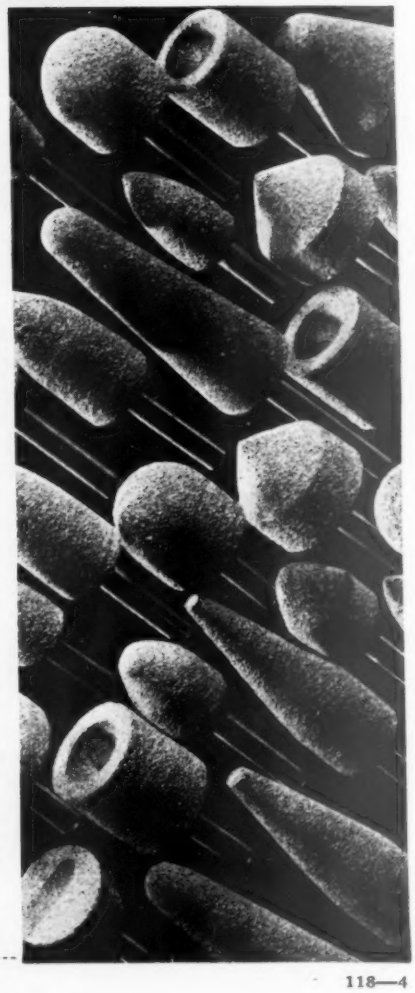
SAY! YOU, UP THERE on the PRODUCTION FRONTS

No more holding up the steady flow of vital war needs because you're waiting for grinding wheels.



WE'RE RIGHT BEHIND YOU

Can make prompt deliveries on all Mounted Points and Grinding Wheels 3″ in diameter and under. We've stopped making the larger sizes for the duration, so we can fill orders quickly for these important smaller sizes.



IT'S OUR WARTIME JOB

With the approval and endorsement of W P B, all our facilities are concentrated on turning our large quantities of wheels 3″ in diameter and under. We're at it 24 hours a day, and keeping up with orders. Our central location is an advantage and means no time is lost between our production line and yours.

TRY ONE FREE — Tell us the kind of job, type grinder you use and size wheel you'd like for your test, and we'll send one free postpaid.

NEW CATALOG — shows mounted wheels in actual colors and sizes, portable electric tools and time-saving accessories for grinding, burring and polishing.

CHICAGO WHEEL & MFG. CO.

America's Headquarters for Mounted Wheels

118 S. Aberdeen St. Chicago, Ill.

MAIL THIS COUPON TODAY

118—4

☐ Send Catalog ☐ Free Wheel. Size .....

Name .....

Address .....

(Continued from page 237)

questing bidders to keep the department advised of the products they had available from time to time. Purchase orders were awarded on this basis until the requirements of the using agencies were filled, which took approximately five months.

The Purchasing Department staff is comparatively small, consisting of 11 employees in the Administrative Division, 6 in the Reproduction Division, and one in the Division of Stores. Three of the men entered the army and had to be replaced with temporary help; two female employees left to marry and had to be replaced, and one employee resigned.

But in spite of the woes and tribulations, Mr. Wagner managed to develop a purchasing procedure for the CDC, sell $101,143.47 worth of scrap material, and spend $3,444,842 for materials, supplies and equipment, involving the handling of 6,386 requisitions, 12,063 purchase orders, 194 informal agreements, and 257 formal contracts. The largest item in the distribution was $511,762 for competitive contractual services, graduating down to $1,065.00 for live stock and animals.

REALIGN WPB STAFF

Appointments to key positions on the War Production Board top staff have been announced by Chairman Donald M. Nelson and Charles E. Wilson, Executive Vice Chairman. The appointments are preliminary to a regrouping of WPB staff functions which are now being worked out in detail.

Ralph J. Cordiner, who has been Director-General for War Production Scheduling, becomes a Vice Chairman of WPB and will serve as a special assistant to Mr. Wilson.

J. A. Krug, Director of the Office of War Utilities, is named Vice Chairman of the War Production Board in charge of Materials Distribution. He also becomes chairman of the Requirements Committee and will continue to serve as War Utilities Drector.

Donald D. Davis, recently Director of the Program Bureau, becomes WPB Vice Chairman for Operations.

Curtis Calder, until today Director General for Operations, will be Executive Assistant to Mr. Wilson.

William L. Batt will continue to serve as a WPB Vice Chairman, and Col. Robert E. Johnson, head of the Smaller War Plants Corporation, retains the rank of Deputy Chairman.

Mr. Krug, whose home was in Madison, Wisconsin, before he entered government service, was formerly Director of Power for the Tennessee Valley Authority. He was appointed head of the Power Division of the Office of Production Management in the summer of 1941, and held the same position with WPB until he became Deputy Director General and head of the Distribution Bureau last August. He was appointed Director of the Office of War Utilities last August.

Donald D. Davis was president of General Mills Inc., Minneapolis, Minnesota. His home is in Wayzata, Minnesota. He joined the staff of the War Produc-

tion Board at the beginning of November, 1942, and on November 11 was appointed Director of the Program Bureau.

Ralph J. Cordiner was president of Schick, Incorporated, before joining the War Production Board staff on December 8, 1942, as Director General for War Production Scheduling. His home is in Stamford, Connecticut.

Curtis E. Calder, Bronxville, New York, is president of the American and Foreign Power Company of New York City. He joined the staff of the War Production Board in November, 1942, as the Deputy Director General for Industry Divisions, and on January 19, 1943, was appointed General for Operations.

1 1 1

REGIONAL OFFICES ASSIGN PREFERENCE RATINGS ON PDIA TO $100

Another long step in the decentralization of War Production Board activities was made public when chairman Donald M. Nelson announced a new WPB administrative order which directs that, after March 1, applications for priority assistance on Form PD-1A be filed with the nearest of the 131 WPB district offices, and authorizes the 12 Regional Offices, beginning March 15, to assign preference ratings on PD-1A certificates to deliveries of materials valued at $100 or less.

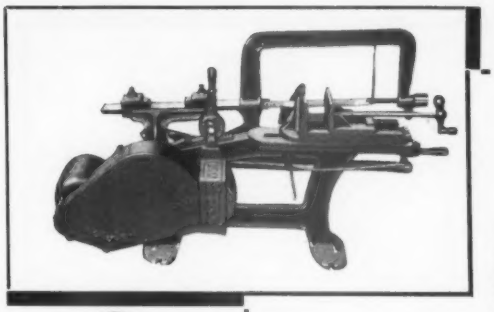
Mr. Nelson said that the preliminary value limitation of $100 would be progressively stepped up as the field offices assume greater responsibilities and he expected that more than eighty per cent of all PD-1A applications would be handled entirely by the Regional Offices.

Under this new procedure, which will simplify greatly the problems of businessmen and others needing occasional priority assistance, WPB's field offices will be responsible for seeing that all PD-1A applications are promptly filled out and will forward them to Washington, or to the Regional Offices if they fall within the value limitations set by the order.

Another administrative order, effective March 8, empowers Regional Offices to authorize construction under Conservation Order L-41, and to assign preference ratings to deliveries of necessary scarce materials to building operations costing less than $10,000 except industrial and certain other listed types of construction. Applications for authority to begin construction under this procedure are also to be filed with the nearest WPB district office.

In the early days of the priorities system, Form PD-1, later supplanted by PD-1A, was the principal instrument in the assignment of preference ratings to orders for scarce materials. Later, the Production Requirements Plan, now being superseded by the Controlled Materials Plan, provided the means for distribution of the great bulk of material required for military and essential civilian production, and receipt of the PD-1A forms has dropped from a one-time peak of more than 60,000 a week to only a little more than one-half of that number at the present time. The fact that CMP provides central control over the distributon of scarce materials to claimant agencies make it possible to decentralize handling of PD-1A's.

(Continued on page 240)



The MACHINE and the BLADE for economical Hack Sawing . . .

Construction, performance and results mark this sturdy, low cost MARVEL Hack Saw and these MARVEL High-Speed-Edge Hack Saw Blades as the most economical equipment you can buy for straight-cutting general-purpose work. This small MARVEL dry-cutting saw with automatic stop, V-bearings for frame slide, equipped with sturdy vise, is made in two sizes: No. 1 with 4" x 4" capacity and No. 2 with 8" x 8" capacity —stationary or portable, belt or motor drive (as illustrated). MARVEL High-Speed-Edge blades with High Speed Steel cutting edge welded to a tough alloy back are economical because they are *positively unbreakable.*

Write for catalog of complete MARVEL Hack Saw equipment showing machines for every purpose—the choice of industry everywhere.

ARMSTRONG-BLUM MFG. CO.
"The Hack Saw People"
5700 Bloomingdale Ave. Chicago, U.S.A.
Eastern Sales Office:
225 Lafayette St., New York

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PLASTIC NAME PLATES
DIAL-FACES
CHARTS, SCALES
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LAMINATED for Permanence
SAMPLES AND ESTIMATES CHEERFULLY SUPPLIED
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PATCH FLOORS
. . . While Traffic Rolls

Here's a new, fast way to patch broken concrete without having to close off the area. Use durable INSTANT-USE . . . a tough, plastic material which you simply shovel into hole—tamp—and run traffic over immediately NO WAITING. Bonds tight to old concrete. Makes smooth, solid, heavy-duty patch. Withstands extreme loads. Keep a drum on hand for emergencies. Immediate shipment.

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It's got something on the ball!

27 sizes with 4-hole head; 15, sizes with ratchet head. 8¾ to 29¾" high, 2 to 19½" lift, 5 to 30-tons capacity.

Self-leveling, drop forged cap "floats" on large chrome-molybdenum steel ball, reducing friction 88%. Safety peephole in unbreakable malleable iron base prevents over-extension of screw. Not just a screw jack—it's a Simplex Jack.

Templeton, Kenly & Company, Chicago

Better, Safer Jacks Since 1899

Make Your Jacks Last Longer!

Proper lubrication, care and handling will do it. Send for a bulletin on the care of jacks.

Simplex
LEVER · SCREW · HYDRAULIC
Jacks

MUSIC WIRE. Conforming to Government specifications (WD 1085-WD 1095). Stock sizes .004" to .180" dia.

All Johnson wire is laboratory controlled all the way from original steel to finished product.

JOHNSON STEEL & WIRE CO., INC.
WORCESTER ★ MASSACHUSETTS.
NEW YORK AKRON LOS ANGELES

(Continued from page 239)

Ratings assigned on PD-1A certificates are known as "single-shotters", since the priority assistance they provide is applicable only to the particular delivery for which help is requested. They do not establish the continuing assistance provided by PRP and CMP, and by orders in the "P" series covering specified industries.

COPPER SCRAP NAMED NO. 1 SALVAGE PROBLEM

Copper scrap is the number one industrial salvage problem in 1943, although iron and steel scrap collection must be maintained at high level, Hamilton W. Wright, chief of the War Production Board's Industrial Salvage Branch, told a conference of regional chiefs of the branch who came to Washington to learn the programs, policy, and special methods of handling industrial salvage projects set up for 1943.

Industrial salvage must produce a very large per cent of the scrap necessary to keep America's steel mills, copper, and aluminum plants at peak war operation during 1943, Mr. Wright explained.

The collection of iron and steel scrap cannot be neglected in any particular, however, it was pointed out by Paul C. Cabot, director of the WPB Salvage Division, because 13 million tons of purchased iron and steel scrap will be needed by the nation's steel mills in the first half of 1943. Dormant scrap must fill a large part of this need, Mr. Cabot said. "Dormant scrap is idle, slacker metal loafing on the home front when it should be fighting on the battlefront," he said.

OPA URGES RECONDITIONING OF TRUCK BRAKE DRUMS

Truck owners and operators troubled by gremlins in the wheels, faulty braking, excessive wear on tires and too many layups for brake relining will often find the cause in poor condition of brake drums. In such instances the hazard of uneven or locking brakes, the waste of rubber and loss of time can usually be cured by reconditioning the drums.

A report on Reconditioning of Brake Drums prepared by the Society of Automotive Engineers for the Office of Defense Transportation tells how the reconditioning should be done. Based on recommendations of manufacturers and brake shops and the practice of operators of buses and both light and heavy trucks, the report cites the fact that smoothness of the drum greatly influences lining wear and states that while wornout or cracked drums are usually discarded, checked, grooved, out-of-round or bell-mouthed drums can and should be reconditioned.

The SAE study shows that drums properly reconditioned within the recommended limits are as safe in operation as new ones, that their total life may be extended as much as 80 per cent and that drums may be reconditioned any number of times as long as the total

(Continued on page 242)

When Lubrication Fails

N-B-M "TIGER" BRONZE TAKES OVER

When running under strain, any machine may develop lubrication trouble. "Tiger" Bronze insures against temporary lubrication failure. Its soft lead, evenly distributed throughout the metal, lubricates the dry shaft and protects the life of your machinery.

Write for our "Tiger" Bronze Chart—showing the hundreds of sizes of cored and solid bars available—rough and machined.

NBM

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METALS CORPORATION
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PLANTS IN: ST. LOUIS, MO. • PITTSBURGH, PA. • MEADVILLE, PA. • JERSEY CITY, N. J. • PORTSMOUTH, VA. • ST. PAUL, MINN. • CHICAGO, ILL.

When writing National Bearing Metals Corporation please mention Purchasing

EVERY STEP *is a* SURE STEP

play safe.. with

WETORDRY Safety Walk

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MINERAL COATED FABRIC for all non-slip purposes

Many war plant accidents can be avoided by using WETORDRY Safety Walk applied with 3-M Safety Walk ADHESIVES, thereby saving needed man hours.

WETORDRY Safety Walk is a flexible mineral coated fabric available in convenient size roll form. It is long wearing, non-slip and easily applied by the average workman.

WETORDRY Safety Walk is now being widely used in those places where previously rubber, loose grain and cement or other non-slip materials have been used. Stair treads, catwalks, runways or around machinery in the plant, on aircraft, tanks and ships are but a few places where it is used today.

You may have a problem where our sales engineers could aid you with the use of this material. Why not fill in the coupon below and give them an opportunity to do so.

3-M SAFETY WALK ADHESIVE

This adhesive is but one of several hundred made by us today and is made specially for attaching WETORDRY Safety Walk to wood, canvas covered plywood or metal.

MINNESOTA MINING & MANUFACTURING CO.

SAINT PAUL, MINNESOTA

We would like to use WETORDRY Safety Walk as follows: .....

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Please send information.

Company .....

Address .....

City ..... State .....

P 443

OTHER 3-M PRODUCTS AIDING WAR PRODUCTION

- 3-M Abrasive Paper and Cloth Products.
- "SCOTCH" Tapes.
- 3-M Adhesives.
- 3-M Wax and Sealer.
- 3-M Lapping and Grinding Compounds.
- 3-M Cutting and Finishing Compound.
- 3-M Fibre Gaskets.

(Continued from page 240)

metal removed does not exceed 25 per cent of new drum thickness. Drum metal should be removed in thicknesses to match the standard oversizes of brake lining as recommended by the Brake Lining Manufacturers Association.

Fifth in a comprehensive series of more than 25 SAE reports covering the major problems of truck maintenance, the Brake Drum Reconditioning Report, as well as the four preceding ones, may be obtained without charge from any of the 142 District Offices of the ODT or from field offices of the Office of War Information.

The Office of Defense Transportation points out that although reconditioning of drums has not been in the past a common practice, the necessity of conserving tires and the current shortage of parts and labor make it an important means of preserving existing equipment to aid the war effort.

AIM TO CONSERVE AUTOMOTIVE EQUIPMENT

In a move to safeguard the continued operation of existing automotive equipment despite serious shortages of materials and manpower, the Office of Defense Transportation has announced that it is sponsoring the establishment of Maintenance Advisory Committees throughout the country.

The ODT pointed out that the automotive maintenance problem is two-fold:

Present shortages and the possibility of greater future shortages of essential parts, maintenance materials, tools and equipment make preventive maintenance measures a "must" throughout the automotive field.

The need for the development of a comprehensive maintenance program is further emphasied by the growing shortage of mechanics and drivers, and the necessity for training men and women to replace those entering the armed forces and war industries, the ODT pointed out. The shortage of mechanics already has caused the closing of many garages and dealerships.

The original committees are to be appointed on a temporary basis for the purpose of aiding the ODT in organizing permanent maintenance committees, the members of which will represent seven different branches of the automotive industry including private and for-hire carriers, truck factory branches, truck and automobile dealers, garages and parts jobbers.

At the same time, each ODT district office was asked to designate one staff member as "maintenance specialist," whose duties will include the following:

1. To establish and work with the District Maintenance Advisory Committee.

2. To cooperate with WPB's Automotive Branch field force in locating used parts and organizing used parts yards, as well as obtaining essential new parts for trucks that are laid up due to a lack of parts.

3. To cooperate with the Army Motor Transport Division's field force in obtaining parts and service facilities for

(Continued on page 244)

Cut out UNNECESSARY HANDLING . . .

↓Hydraulic elevating table transfers dies to and from storage shelves.
↓Hydraulic die truck separating male and female dies.
↑Tiering materials with high lift truck.
↑Transporting pallet loads of sheet metal. Truck also tiers loads.
←Hydraulically elevating die to press bed.
↓Load on two-faced pallet hauled by Hydraulic Lift Truck (pallet type)
↑Supporting extended work level with table of drill press.
↓Skid load handled by Hydraulic Lift Truck.
←Hydraulic forked platform, high-lift truck stacks skids, pallets or racks.
→Unwieldly equipment or material lifted by straddle-base truck with hydraulic boom.
↑Sheet feeding from hydraulic elevating table.
→Hydraulic elevator, electrically controlled, eliminates ramps.
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LYON *Hydraulic*

Material Handling Equipment

IF ONE OF THESE IS A PROBLEM

CARRYING
DUMPING
ELEVATING
FEEDING
HOISTING
LEVELING
LIFTING
LOADING
LOWERING
REVOLVING
SPOTTING
STACKING
STORING
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Eliminate Waste Motion—waste time—waste man-power with fast, efficient Lyon Hydraulic Material Handling Equipment! Lyon makes such a wide variety of machines for such a wide range of uses that you're bound to find *just the right machine for many of your jobs!* Standard Lyon units have been speeding up material handling, saving valuable war-production time in the nation's largest companies. Adaptations of these units have been designed for specialized industries, such as aviation, with outstanding success. And for complicated handling problems requiring even more specialization, our engineers are constantly developing particular units for individual cases.

You too can add new speed, safety and economy to your production with a Lyon machine that will handle material faster, easier and more efficiently. Our staff stands ready to suggest and design equipment to meet your every need!

● SEND FOR our new reference literature—something you'll want to keep—a "Condensed Catalog" of the safest, fastest and most reliable handling methods—with Lyon Hydraulic Material Handling Equipment. Or if you have one of the following Lyon Units already in mind for your purpose check it and clip the coupon for complete information:

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MATERIAL HANDLING EQUIPMENT
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Please send us more information about the LYON Material Handling Equipment checked below.

- ☐ Lyon Hydraulic Lift Truck
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- ☐ Lyon Hydraulic Die Handling Trucks
- ☐ Lyon Hydraulic Sheet Handling Trucks
- ☐ Lyon Hydraulic Elevating Tables
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- ☐ Lyon Hydraulic Welding Positioners
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CLARK
The Name With Almost a Century of Experience.

Time Tested
CLARK BROS BOLT CO.
MILLDALE, CONN.
CLARK BROS BOLT CO. MILLDALE CONN.
PRODUCTION

(Continued from page 242)

Army contracts and assisting in obtaining Army priorities trucks where necessary.

4. To cooperate with local OPA officials in obtaining tires for trucks, buses and other essential vehicles .

5. To locate garage and maintenance facilities with proper equipment and sufficient manpower to maintain essential transportation equipment.

6. To encourage the rebuilding and reclaiming of essential used parts.

7. To assemble data, with the assistance of the Maintenance Committee, regarding the availability or lack of new and used replacement parts, repair materials, tires, maintenance facilities and mechanics, and to report on the progress of the maintenance program generally.

The basic functions of the District Maintenance Advisory Committees will be to assist in securing information on local problems; to disseminate information to the industry on government regulations, maintenance, aid in the development of training programs, and so on.

SHIPPING OVERCHARGES ON STEEL DRUMS

Some of the difficulty in securing application in the Eastern area of 1st Class rates to empty steel shipping drums (5 gallon) returned for refilling is occasioned by failure to describe these packages in the terms used in the freight classification . . . "DRUMS, STEEL, shipping (used) 24 gauge" . . . or 26 gauge, as the case may be, says the Nat. Paint, Varnish and Lacquer Association. Failure to indicate that these are old, and drums, with sides made of 24, or 26 gauge metal, results in rating them as new drums and computing charges at the higher 1½ x 1st Class rates. Third (3rd) Class rates are authorized for "drums, steel, shipping (used) 20 gauge" or thicker—usually, but not exclusively, 55 gallons capacity. Claims for overcharges are paid without argument, when reference is made to Supplement 6, (Page 6, Item 24) National Motor Freight Classification No. 6 . . . or for railroads, Supplement 18, (Item 9265-A), Consolidated Freight Classification No. 15.

100 HOLD 70% OF DOLLAR VOLUME OF PRIME CONTRACTS

One hundred war contractors held 70 percent of the dollar volume of prime contracts, or $59,557,900,000, as of the end of November 1942. This is shown in an analysis of individual supply contracts of $50,000 or over held by 100 corporations to whom the largest volume of contracts has been awarded.

As of the end of June 1942, the top 100 companies held 71 percent of the dollar volume of these contracts. Earlier studies based on Army, Navy and Maritime Commission contract awards only showed that at the end of February 1942 the top 100 concerns held 76 percent of the dollar volume, and at the end of September 1941, 83 percent.

The awards are for airplanes and parts,

(Continued on page 246)

Stop War Casualties in Your Plant!

Keep all "hands" on the job with
Stanzoils
of Oil-and-Acid-Safe Neoprene
Stanzoils offer you one sure way to protect hands working in oils, acids, caustics, other harmful materials. Made of DuPont's miracle neoprene, Stanzoils resist damage from such substances, frequently outlast rubber gloves as much as 3 to 7 times. Men and women employees do more work with them. Hundreds of different industries now use Stanzoils. Write for current delivery data.
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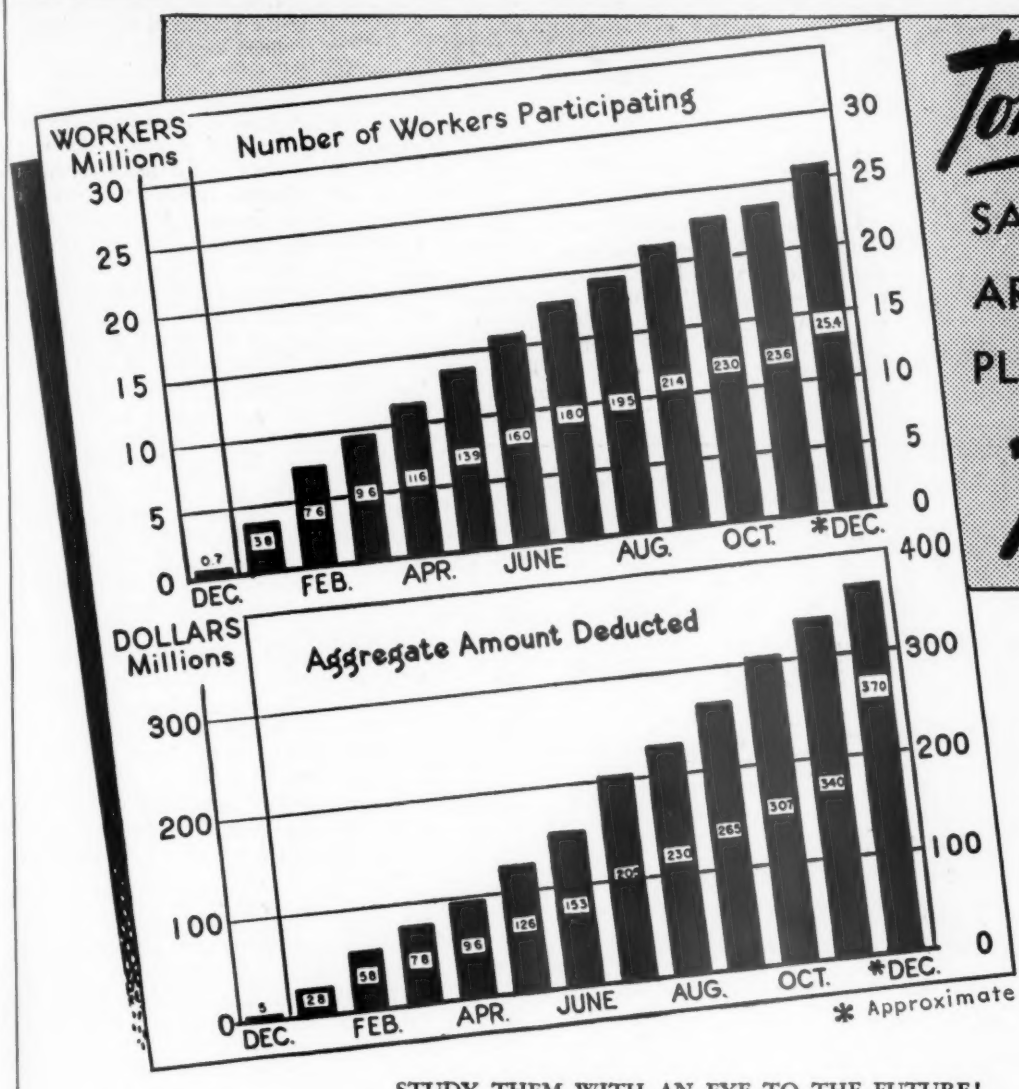


Tomorrow's SALES CURVES ARE BEING PLOTTED . . . Today

THESE CHARTS SHOW ESTIMATED PARTICIPATION IN PAYROLL SAVINGS PLANS FOR WAR SAVINGS BONDS *(Members of Armed Forces Included Starting August 1942)*

STUDY THEM WITH AN EYE TO THE FUTURE!

There is more to these charts than meets the eye. Not seen, but clearly projected into the future, is the sales curve of tomorrow. Here is the thrilling story of over 25,000,000 American workers who are today voluntarily saving close to FOUR AND A HALF BILLION DOLLARS per year in War Bonds through the Payroll Savings Plan.

Think what this money will buy in the way of guns and tanks and planes for Victory today—*and mountains of brand new consumer goods tomorrow.* Remember, too, that War Bond money grows in value every year it is saved, until at maturity it returns $4 for every $3 invested!

Here indeed is a solid foundation for the peace-time business that will follow victory. At the same time, it is a real tribute to the voluntary American way of meeting emergencies that has seen us through every crisis in our history.

But there is still more to be done. As our armed forces continue to press the attack in all quarters of the globe, as war costs mount, so must the record of our savings keep pace.

Clearly, on charts like these, tomorrow's Victory —*and tomorrow's sales curves*—are being plotted today by 50,000,000 Americans who now hold WAR BONDS.

EVERYBODY EVERY PAYDAY AT LEAST 10%

Save with War Savings Bonds

This space is a contribution to America's all-out war effort by

CONOVER MAST COMPANY

U. S. GOVERNMENT PRINTING OFFICE 505500

(Continued from page 244)

tion and other munition items. The figures cover the war contracts reported as awarded by the Army, Navy and Maritime Commission since June 1940, and by foreign purchasing missions since September 1939. The defense aid awards of the Treasury are included.

Twelve of the top 100 corporations in November were not among the leading 100 in June. Of the total value of supply contracts reported as awarded between the two periods, 70 percent went to the 100 corporations in the November listing and 66 percent went to the 100 corporations in the June tabulation.

The distribution of war work is widened by the extent to which those companies subcontract jobs to other manufacturers. However, a considerable portion of subcontracts awarded by all other prime contractors goes to the 100 corporations.

★ ★ ★

NEW OIL DISCOVERIES BUT 57% OF PRODUCTION

For the first time, Petroleum Administrator Ickes has announced, a Federal Government agency has made a survey of all the new oil fields actually discovered during a calendar year. As a result of this survey, it has been determined that during the year 1942 only 801,000,000 barrels of crude oil were discovered in the U. S.—about 57% of the approximately 1,400,000,000 barrels consumed during the year. And this estimate, Mr. Ickes pointed out, is a liberal and optimistic estimate of what might be expected on the most favorable probable basis. On the basis of the traditional engineering methods of estimating proven reserve of crude oil—the methods under which all calculations are made on the conservative side—only 421,000,000 barrels were discovered during the year.

Deputy Administrator Davies said that in ordinary times this situation would be somewhat serious but not necessarily alarming, because the trend might soon be reversed, but that in time of war it becomes a matter of immediate concern.

★ ★ ★

OIL DEMAND TO BE HEAVY IN 1943

Grave doubts exist that the United States will be able to continue to supply all war requirements for oil from domestic sources, Robert Allen, Deputy Assistant Petroleum Administrator, declared in testimony before the House Deficiency Appropriations Committee. Mr. Allen said the Petroleum Administration for War now had the War Department's estimate of its oil requirements, which were very great, although subject to considerable change. Therefore, the possibility of using the petroleum resources of the entire world must be surveyed, with plans made to have these sources available in advance for our military services, he said.

★ ★ ★

GOVERNMENT CURTAILS PUBLICATIONS AND MAILING LISTS

More than 42,317,000 copies of informational publications and press releases of the Federal Government have been eliminated in adjusting government information operations to wartime needs, according to the Office of War Information. Of the total reduction, publications account for 34,528,000 copies and press releases for 7,789,000 copies.

Elimination or curtailment of 309 government periodicals and pamphlet series was recently announced by the Office of War Information, bringing to a total of 832 the publications so affected.

This represents a cut of about 20 per cent in Federal Government informational publications published in 1940—the year prior to this country's entrance into the war—when a total of 226,000,000 copies were issued.

These reductions, Mr. Davis pointed out, are a small part of the increases in publications necessitated by the war. The cuts will ease the strain on manpower, paper, printing, and mailing facilities.

★ ★ ★

HOWARD F. STOVER MADE DIRECTOR OF N.A.M.

Howard F. Stover, secretary-treasurer, and former Purchasing Agent of the Gaso Pump & Burner Manufacturing Co. of Tulsa, has been elected a member of the board of directors of the National Manufacturers Association, in which capacity he will serve as national director for Oklahoma.

NOTICE
TO WAR INDUSTRIES

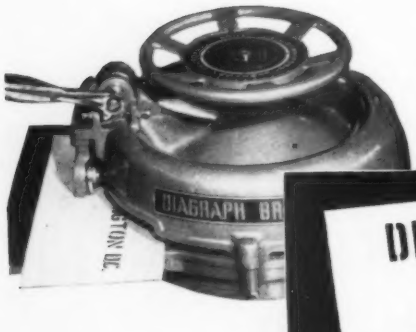
★★★ If your shipping room's stencil cutting machine needs repair, your nearest Diagraph-Bradley distributor will lend you a machine while our factory puts your equipment in tip-top order.

Our experts overhaul *all* makes and models. If you need a new machine, we can make immediate shipment, in letter sizes from ½″ to 1¾″ to firms with high priority ratings.

Complete Shipping Room Supplies

Diagraph-Bradley non-settling, non-clogging, stencil Ink, Stencil Board, Fountain Brushes, Fountain Markers.

Distributors in principal cities. See phone book or write Diagraph-Bradley Stencil Machine Corp., 3750 Forest Park Blvd., St. Louis, Mo.



DIAGRAPH-BRADLEY STENCIL CUTTING MACHINES. *Features*: Exclusive punch guide assures perfect alignment; Removable interchangeable letters; Easy-to-read dial; Ball-bearing construction; Visible feed; Fewer working parts; Smooth-baked finish; Cuts stencils any length.

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Paint Formulae Save Linseed Oil

Savings up to 50% of Normal Requirements for Red, White and Blue Lead Paints

New mixing formulas for red, white and blue lead paints to be made up on the job, the use of which will save up to 50 percent of the normal linseed oil requirement, have been recommended by the Specifications Branch of the Conservation Division.

Our limited imports of castor nut, babassu nut and oiticica oil from South America; stoppage of our imports of tung oil from China, coconut oil from the Philippines, and palm oil from Africa; and lend-lease exports of edible oils have all contributed to the over-all shortage of fats and oils. Since oils are to a large extent interchangeable, increasing demands made on our limited supply of linseed oil, produced from flax grown in the Middle West, called for conservation measures.

Prepared by the National Bureau of Standards, the new formulas provide for substantial savings of linseed oil with no detrimental effect to the paint. Reduction of linseed oil content merely increases the pigment volume ratio.

100 pounds	*Customary*	*Proposed*
Raw linseed oil	3⅛ gals.	2 gals.
DRY RED LEAD		
Turpentine or mineral spirits	⅜ gal.	¾ gal.
Liquid paint drier ...	2.5 pts.	2 pts.
PASTE RED LEAD		
Raw linseed oil	2 gals.	1/5 gal.
Turpentine or mineral spirits	⅜ gal.	¾ gal.
Liquid paint drier...	2/5 pts.	2/5 pts.
DRY BLUE LEAD		
Raw linseed oil	3/5 gal.	2¾ gals.
Turpentine or mineral spirits	¼ gal.	1 gal.
Liquid paint drier...	2 pts.	2 pts.
PASTE BLUE LEAD		
Raw linseed oil	2¾ gals.	1¾ gals.
Turpentine or mineral spirits	¼ gal.	1 gal.
Liquid paint drier...	2 pts.	2 pts.
PASTE WHITE LEAD (suitable for tinting)		
First Coat		
Raw linseed oil	4 gals.	2½ gals.
Turpentine or mineral spirits	2¼ gals.	2¾ gals.
Liquid paint drier...	1 pt.	1 pt.
PASTE WHITE LEAD		
Second Coat		
Raw linseed oil	1½ gals.	1 gal.
Turpentine or mineral spirits	1¾ gals.	1¾ gals.
Liquid paint drier...	1 pt.	1 pt.
PASTE WHITE LEAD		
Raw linseed oil	3¼ gals.	2 gals.
Turpentine or mineral spirits	¼ gal.	5/8 gal.
Liquid paint drier...	1 pt.	1 pt.

In recent years new fast-drying finishes containing alkyd and phenolic resins have been developed. The Armed services made heavy demands for these finishes to be used in coating shells, trucks, tanks, airplanes and ships. Increased demand and limited supply of this type of finish necessitated allocation control of phenolic resins established under Conservation Order M-246, issued November 4, 1942 and Conservation Order M-254, issued October 26, 1942. Conservation Order M-139, allocating control of alkyd resins was issued December 7, 1942.

Because of these allocation controls, synthetic resins for use in the production of metal primer paints are not available for civilian use. However, the older type of finish (linseed oil) is more than adequate for non-combat use.

AUDIBLE SIGNAL SCALE FOR BLIND WORKERS

Weighing scale known as the "audio scale" which makes it possible for the blind to weigh rapidly and accurately, has been developed by the Toledo Scale Company, Toledo, Ohio. The scale operates on the airplane radio beam principle giving the audible signal "A" as long as the scale shows under correct weight, and the signal "N" if it registers over. Correct weight is signalled by an unbroken buzz. With the aid of this scale blind operators are said tdo be able to package phonograph needles, 25 or 50 to a pack, more rapidly than by counting. The scale, which was developed in collaboration with the American Foundation for the blind, is also expected to prove useful to sighted persons who have to work in dark rooms, or who must concentrate on such operations as filling narrow-mouthed containers to a net weight content.

POST-WAR PRODUCTION MEANS NEW TYPES OF MERCHANDISE

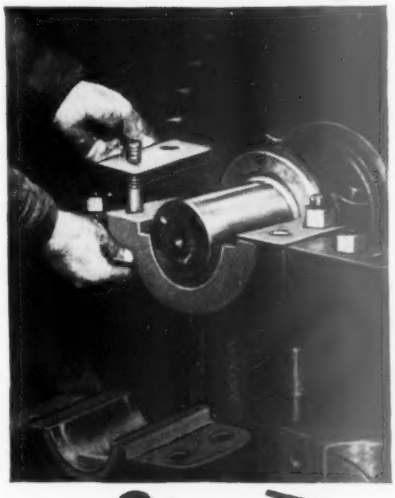
Completion of the nation's synthetic rubber program as scheduled—"probably in 1944, or within two years"—would be "an achievement whose magnitude has not been approached even in Germany, where they've been working hard to make themselves independent of natural rubber for over 30 years," declared J. J. Newman, vice president, B. F. Goodrich Co., at the New England Wartime Sales Management Conference.

In assaying the post-war sales implications of this development, Mr. Newman said that with vast quantities of available synthetic being augmented by the return of natural rubber to world markets, the resultant rubber surplus would create "one of the biggest of all foreseeable post-war marketing problems."

The problem not only will concern those of us in rubber," he said, "but will have an effect on many other industries as well. It will become a combined problem of science and sales management to find, create and fill new practical uses for the additional quantity of rubber available. Products that have never been made of rubber may then very well become an important part of your industry, no matter what it may be."

(Continued on page 248)

start



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Laminum shims (.003 or .002 in. laminations bonded into a solid unit easy to peel) are cut to your specifications.

Stock shim materials obtainable from mill supply dealers. (Write us for sample and illustrated shim application file-folder.)

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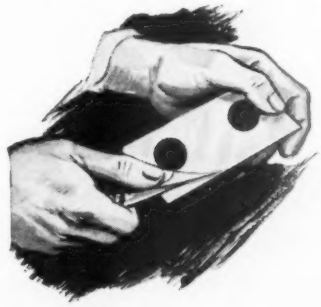

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LAMINUM
TRADE MARK

THE SOLID SHIM THAT *peels* FOR ADJUSTMENT

THERE IS NO SUBSTITUTE FOR "LENOX" QUALITY

Faster production is being demanded today on metal cutting jobs.

Shops whose work demands quality, uniformity and service are finding that starting with LENOX means staying with LENOX and the answer to their problems.

Today our plant is at top speed, our men are in there fighting every obstacle, keeping LENOX QUALITY at its peak.

Carried by selected Distributors from Coast to Coast. See yours today.

AMERICAN SAW MFG. CO.
SPRINGFIELD, MASS.

LENOX
HACK SAWS
BAND SAWS
"The Blade in the Plaid Box"

(Continued from page 247)

Consumers will benefit from this situation, he said, since "synthetic rubber, already competitive in quality, will in time be competitive in price with natural rubber. This very likely will mean that we can price our products lower, eventually making them available to a greater number of people. By changes in the basic chemical formulae, there can be produced synthetic rubber having particular resistance to abrasion, or to oil, or to sunlight, or to heat—all of which are natural enemies of rubber—or any number of other specialized properties."

After the war the country's whole concept of many raw materials and of quality in merchandise may change, the executive of the pioneer Akron company said, adding that "for generations we have considered the sheep, the silkworm and the cotton plant as the primary sources of fibers for almost all the fabrics we have. Yet these three are today being supplanted and supplemented by several hundred synthetic fibers made from such unorthodox commodities as milk, lime, coal, air and water.

"Salesmen will no longer be able to define quality in the old standby terms such as 'all wool, or pure silk, or crude rubber.' More likely, the salesman will place a microscope or spectroscope before the prospective buyer and say 'just look at that crystal structure—this dress is 100 per cent pure petroleum,' or 'that suit of clothes is 100 per cent pure limestone and coke'."

Habits of conservation learned in this wartime, Newman said—such as reboiling coffee grounds, "extending" butter and cream, re-treading tires and doing more half-soling of shoes—will present sales management with a challenge to devise radically new merchandising methods in the post-war period, "for we will not return soon to the blissful, wasteful, extravagant living to which we were accustomed."

NO TIN USED IN NEW BABBITT BEARING

Sleeve bearings of motors and generators have always contained a large quantity of tin. Babbitt metal for this purpose has been composed of 85 per cent tin, 10 per cent antimony, and 5 per cent lead, Westinghouse engineers point out. Another mixture, used in much larger quantities, takes 8 per cent tin, 14 per cent antimony and 78 per cent lead. As a result of the war, the makers of babbitt have developed a tinless metal which consists of approximately 80 per cent lead, 16 per cent antimony, and about 4 per cent arsenic. Engineers have been busy adapting bearing construction and technique to the new arsenic metals. It appears that for most purposes the new bearings are as good as the old ones in performance and are no more difficult to make; less expensive to build, they save tremendous quantities of tin. The new bearing is saving about 5000 pounds of tin per month at Westinghouse plants. Engineers think the new bearings will be retained in industry even when tin becomes plentiful after the war.

FOR BETTER CHAIN SERVICE
TAYLOR-MADE CHAINS

Chain Quality for DEPENDABILTY PLUS

Industry's loads are bigger, faster-moving. Strength, smoothness of chain operation, ample factors of safety, long service, such as are found in T-M Alloy Steel Sling are *vital*.

TAYLOR-MADE

Flash Alloy Steel Sling Chains and Slings

abundantly realize these requirements: By toughest materials — T-M Heat Treatment — T-M Design — T-M Link Welding on both sides. There's a T-M Chain exactly suited for every load or pull. Send for literature and T-M Safe Load Charts. Write.

ESTABLISHED 1873
S. G. TAYLOR CHAIN CO.

SHE'S FIGHTING TOO! **MAKING PARTS WITHOUT DIES**

No delay waiting for dies — parts ready quicker — deliveries speeded up — all to bring the Victory sooner! Women are rapidly taking a major place on the industrial front. DI-ACRO Precision Machines — Shears, Brakes, Benders — are ideally suited for use by women in making duplicated parts accurate to .001"—DIELESS DUPLICATING. Thousands of DI-ACRO Machines are now in use in War plants. **Write for catalog —"Metal Duplicating Without Dies."**

O'NEIL-IRWIN MFG. CO.
305 8th Avenue South
MINNEAPOLIS, MINN.

METAL SPRAYING CONSERVES WOOD PATTERNS AND CORE BOXES

Wearproofing wooden core boxes and foundry patterns against the abrasive action of sand by spraying the surfaces with a light coating of metal has been found to prolong the life of the patterns, to eliminate the necessity of frequent and costly rebuilding, and permits worn wooden patterns or boxes to be completely renewed by the same means.

If the wood surface is relatively soft, or open grained, the metal can be sprayed directly onto the finished wood surface without special preparation. If the wood is hard, close-grained type, a coating of shellac is applied and the spraying is done when the shellac is "tacky." In either case, the thickness of the coating is usually from .002 to about .005 inches. After the coating is sprayed, it is allowed to cool thoroughly and then is sanded down to the finish desired.

Worn areas in used patterns can be coated and holes filled up in a similar manner by merely applying a thicker coating of metal.

The equipment used is an alloy-sprayer, which consists essentially of an electrically heated and thermostatically controlled metal melting pot, properly insulated and contained in a compact housing with a gun handle for air pressure control. The low fusing alloy, available in bar form, is placed in the melting pot and the electrical connecting cord plugged into either AC or DC 110 voltage circuit.

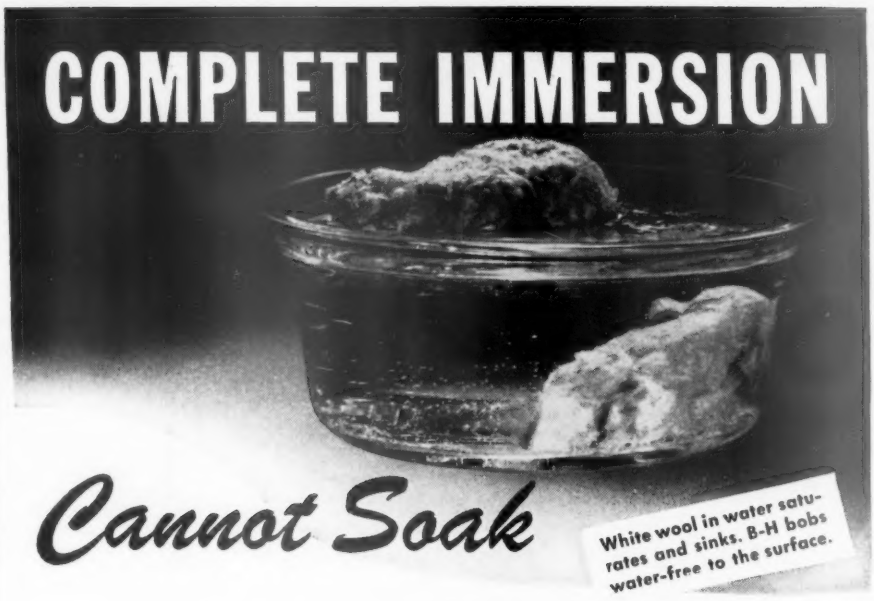
The type of metal usually used is one specially developed for such protective coating. It is a low cost, low fusing alloy but has a relatively hard surface when finished. Purchasing will furnish name of manufacturer to persons interested.

COLOR THERAPY

A new system of using color in hospitals, developed after years of study and a more recent investigation of over 500 hospitals, by color experts of the Pittsburgh Plate Glass Company, is called Color Therapy, in which the psychological power of color complements the curative power of medicine.

The Company's Division of Creative Design and Color has evolved hundreds of color recommendations, all based on Color Therapy. Scientific observations have demonstrated, for example, that green is the shade nature uses as a rest color after a person has been concentrating for a long time on the color of blood. Therefore, color for operating and delivery rooms called eye-rest green has been developed; and its selection is based upon the theory that when the surgeon raises his eyes from the incision for a fraction of a second, he sees blue-green, which is complementary to the red of normal blood.

Color combinations also have been developed for offices, pediatric rooms, autopsy rooms, solariums, wards, isolation rooms, diet kitchens, and other rooms in hospitals. Institutions in Chicago, Detroit, New York, Philadelphia, and Washington, have taken advantage of the system.



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BLACK ROCK-WOOL INSULATIONS

MOISTURE does not disintegrate this utterly different form of rock wool. It does not make it settle. It can't ruin its insulating value. By actual test, B-H black rock-wool absorbs less than 1% of its weight in moisture after being immersed completely.

That is one reason for specifying B-H black rock-wool. Another—equally important—is its stability under heat and vibration. 1400° of flame, which cut their way right through ordinary white rock-wools, leave B-H unharmed. Remember these facts and investigate B-H black rock-wools, felts, blocks and cements.

TO PURCHASING AGENTS EVERYWHERE

It may surprise you to learn that there is this vast difference between different kinds of rock-wool, that the Navy Department and many industrial users now require a low alkalinity which lets only *black* rock-wool compete. We believe these facts will prove important to your firm. We urge you to write for our industrial catalog, and we will appreciate your hearing our representative when he calls.

B-H BALDWIN-HILL INSULATIONS for Industry

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"You Can Rely on Roper"

16 Standard Sizes

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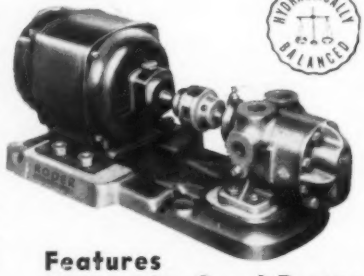
THOUSANDS OF COMBINATIONS FROM WHICH YOU CAN SELECT A MODEL THAT IS PRACTICALLY

Custom Built to fit Your Job!

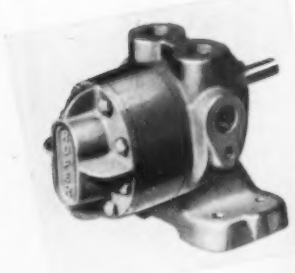
"PUMP as you never pumped before" is the order for every Roper Pump installed in America's war plants. And Ropers are pumping like sons of guns . . . constantly driving an unfailing flow of oil into the lubricating and hydraulic systems that help to convert metals into munitions and engines of war.

And there are good reasons why Ropers are selected to do the tough war time jobs . . . 85 years of engineering and building experience . . . only two moving parts (the simplest basic design yet conceived) . . . hydraulically balanced . . . easier to install . . . easier to service . . . longer lasting because of minimum wear . . . quick adaptability to any job because of the wide variety of models with nearly every conceivable capacity, pressure, speed, drive, mounting and piping arrangement.



Features that make Good Pumps

LARGE BRONZE BEARINGS—two on each side.
SPIRAL PUMPING GEARS — perfectly machined and run-in.
CONSTANT LUBRICATION — (1) by liquid being pumped and (2) by lubricating qualities of the bearing metal used.
WEAR PLATES protect face and back plates from wear by foreign matter.
THRUST COLLAR on drive shaft plus sliding joint takes up shock and thrust.
FOUR PIPE OPENINGS provide eight different piping arrangements.
ROPER PACKED BOX is easily and quickly repacked.
SPLINED DRIVE SHAFT forms sliding joint with gear to absorb shock and thrust.
ALWAYS PRIMED—after once primed and in operation.
ONE PIECE BACKPLATE protects working parts from stress and strain.



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Complete details on Roper Pumps and factual data on pumping problems.

ROPER Rotary Pumps

GEO. D. ROPER CORP., ROCKFORD, ILL.

"You Can Rely on Roper"

The Legal Adventures of Buyem Wright

THE ADVENTURE OF THE "SAMPLE SALE".

If Buyem Wright orders goods totalling $50 or more, and there is no written memo of the sale, he must make a part payment or accept part of the order, to make the sale binding, as every office boy knows.

But, suppose that Wright orders goods "by sample", keeps the samples in his possession, but receives none of the actual order, has there been an "acceptance and receipt of part of the goods so sold" which will make the sale a binding one:

(1). When there is no agreement in reference to the sample?

(2). When the samples are considered as part of the order?

"No," in the first case.

"Yes," in the second.

"The receipt and acceptance by the buyer of samples of the goods are held to be compliance with the statute when the samples are considered and treated by both parties as a part of the goods sold and as diminishing the quantity to that extent; otherwise the taking of samples has no effect upon the validity of the contract," is a concise summary of the rule by the Maryland Court of Appeals.

GUAYULE HARVEST STARTED

The harvest of natural rubber on an industrial scale is underway in California. The Department of Agriculture says that hundreds of tons of rubber are being extracted from the guayule shrub in the Salinas Valley. This year's output, expected to be about 600 tons, will be turned over to the Rubber Reserve Company.

U. S. SHORT ON CHEMICAL MANPOWER

Only one person out of every 2000 in this country is a trained chemist or chemical engineer, according to Dr. C. F. Prutton of the Case School of Applied Science, Cleveland, whereas estimates indicate that Germany has a ratio of three chemically trained people to every 2000 persons. Dr. Prutton charges that drafting of trained men from the chemical fields results in a net loss to the war effort "in view of the tremendous scope and importance of chemical wartime activities".

TOTAL CENTRALIZATION IS NO PURCHASING PANACEA

(Continued from page 102)

inspection laboratory. Some states do not.

Some states do not require their state schools to purchase through the office of the State Purchasing Agent. In such cases provision should be made whereby the schools *could* participate in any state pool contracts or volume buying of maintenance supplies as would bring a better price or higher quality than would otherwise be available to them. Moreover, there should be some provision for pooling certain items such as laboratory glassware, need for which is peculiar to the schools alone, whenever their combined volume of that item would bring a better price than any one school could command by itself.

For those state schools which are required to send their requisitions through the state central procurement office, a measure of relief should be provided by a rather definite classification of the items being purchased. The basis of this classification should be on the degree of consideration that could justifiably be given to the specific wishes of the using agency. For instance, class A items would be such as maintenance materials, used alike by all state institutions, and would be bought by the State Purchasing Agent on standard specifications. Class B items would be such as should be bought by the State Purchasing Agent after comparative tests and after consultation with the using agency as to relative acceptability.

Class C items would be such as were peculiar to the using agency, having no counterpart in other state institutions and wherein the wishes of the using institution would be accorded practically full weight. Class D items would be items for which there is only one source and in which considerations of competition and pooling for volume have no part, such as books, professional services, utilities, etc., which the institutions would be authorized to procure without delay, subject only to budget limitations and record review. Class E items would include emergency purchases under whatever regulations or limitations were currently in effect.

Such an approach to the problem would be intended to preserve the economies of centralized buying and at the same time reserve all justifiable autonomy to the several state institutions.

* * *

PURCHASING MEN COME TO CLASS

(Continued from page 120)

an enterprise may have a high sense of justice in his tent. The state should have an adequate testing and attitude toward those with whom he deals; but his success as an executive in the eyes of the directors and shareholders depends solely upon his ability to pay dividends. As a consequence, he is forced to treat his employees, customers, and supplies of necessary materials and services merely as instruments to this end—to buy always in the cheapest market and to sell in the dearest, regardless of consequences other than immediate profits. In this rspect the modern corporation appears to furnish the nearest approach to that rational, but bloodless and amoral, discovery of the classical economists—the

Need Metal Parts for

QUARTERMASTER ITEMS?

Maybe it's a Judd Job!

Judd has supplied hundreds of millions of pieces to war contractors and directly to U. S. Government procurement offices . . . meeting *all* specifications as to *quality* and *delivery* date.

What do *you* need? If it's small metal parts — cast, spun, threaded, tapped, formed, stamped, plated, riveted, or almost anything else — it's a Judd job!

Details of Judd war service sent promptly on request. Use coupon — or phone or wire our New York Office . . . "War Contracts Manager," at WOrth 2-3653.

DO YOU NEED PARTS LIKE THESE TYPICAL JUDD WAR PRODUCTS?

20 Mm. Rotating Bands; "D" Rings; Snaps; Loops; Slides; Buckles; Keepers; Hooks; Clips; Pull Rings (for Artillery Ammunition); Bolts and Nuts (for Small Arms Cases, etc.), Many Small Stamped Parts (replacing Forgings; have your Engineers check with Judd); Base Plugs (for 20 Mm. Shot)

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Military Hardware

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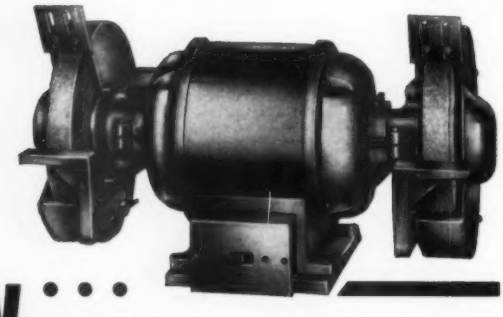
Valley Heavy Duty **GRINDERS** Ball Bearing **MOTORS**



V • • •

ICTORY on the production front is being aided mightily by the economical and faithful service of thousands of Valley motors and grinders in war plants everywhere.

Prompt delivery of Valley Equipment can be obtained by those authorized to purchase.

Valley Ball-Bearing Motors from ½ h.p. to 75 h.p. . . . Grinders from ¼ h.p. bench type to 5 h.p. pedestal models.

VALLEY ELECTRIC CORP.

4221 Forest Park Blvd. — **St. Louis, Missouri**

'economic man'."[1] As though one man implements policy!

Besides, as purchasing men well know, such a generalization takes no account of arrangements designed to foster good will with vendors, which may even take the form of buying materials for a variety of reasons at higher prices than those available elsewhere. Business expediency may dictate any number of practices, familiarity with which readily suggests the difficulty of facile generalization. Long-run policies may also appear to dictate superficially contradictory short-run policies. Costs cannot be calculated and precisely measured against savings which are expected to arise later, and which may actually never arise. At all events, precise calculation of the cost of specific revenues is impossible in the sense sometimes assumed.

But if we may thus chide the theorists, we cannot overlook the more naive practices of some business men. Those of us participating in class discussion were justifiably interested in priorities procedure when it had just begun to get bewildering. We secured at least one outside speaker and also related those expriences and practices of which we had personal knowledge. All were sufficiently literate and up to date to realize that at that time, in the fall of 1941, when the difficulties were first arising, no one could be really "expert" in this new field unless he devoted full time to it, and perhaps then only in certain official capacities in Washington. Even so a reasonable person would doubtless recognize his limitations.

What are we then to say of those apparently smaller concerns whose want ads shortly thereafter set forth as a major requirement for relatively minor jobs, not some familiarity with, but experience in and expert knowledge of, the priorities system? Surely this was at that time nothing more than a reflection of a state of being at sea, and at the same time an invitation to expert bluffers.

Whether a similar lack of sophistication on the part of those in our group would ever assert itself is doubtful. Their objection to available text book material on the ground of lack of sufficient realism was matched by a consciousness of the need for alertly following developments and a strong determination to do so.

[1] Horace Taylor, *et al., Main Currents in Modern Economic Life*, Harcourt, Brace and Co., New York, 1941, vol. I, pp. 270f.

* * *

WPB REGIONAL OFFICES

(Continued from page 119)

concerned with a different aspect of the job of making the wheels of war production run smoothly.

The Director's Office is responsible for the direction of all field activities in an assigned geographical area. It is assisted by the Administrative Office.

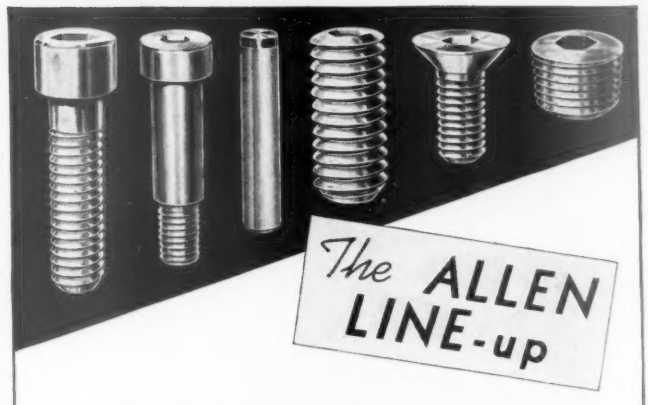
The Statistics Department provides facts regarding the region's potentialities for war production, detailed and summary information on the status of contracts and progress made under them, and information regarding general economic activity in the region and country as a whole.

Labor Production Representatives serve as a focal point of contact for labor unions, management, and government on questions having to do with the war production program. Theirs is a strategic spot advising on labor relations and labor policies relating to war production and working with Federal and State agencies when necessary to avoid disputes and strikes. If

there is a labor controversy, labor production representatives help to straighten it out. If it is a question of wages, they arrange a meeting for the union with the War Labor Board representative for assistance in filing forms for wage adjustments. Time and time again, they have rendered assistance in cases relative to material and conversion problems. They also work with joint labor-management committees and other governmental agencies to assist production drives in war plants and to promote training, health, and industrial safety programs.

To the Priorities Department is entrusted the job of exercising control over uses of materials and keeping them flowing into key war production channels. It furnishes accurate information on priorities regulations and orders and reports to the Compliance Department indications of non-compliance with such regulations and orders. It also issues preference rating certificates up to $500 for priorities assistance for emergency maintenance and repair, it processes applications for Defense Housing Projects, and issues preference ratings for emergency assistance where there is an imminent stoppage or slowdown of production of greatly needed war or essential goods arising out of the lack of small amounts of production material. This department assigns preference ratings on PD-1A certificates to deliveries of materials valued at $100 or less. The district offices are responsible for seeing that all PD-1A applications are properly filled out and forward them to Washington or to the regional offices if they fall under the $100 value limitation set by the recent order.

As the name suggests, the Compliance Department



to HOLD machine set-ups

ALLEN Products stand up to the stresses in war-driven machines *and* die assemblies. They hold parts together *"under fire"*, — preserve the strength and unity of each assembly. . . The well-informed Purchasing Official needs a handy, charted reference to Allen SPECIFICATIONS. 10-page Bulletin *awaits your request:* — includes standard dimensions of Allen Hollow Set Screws, Square Head Set Screws, Socket Head Cap Screws, Flat Head Cap Screws, Socket Head (*"Tru-Ground"*) Shoulder Screws, "Tru-Ground" Dowel Pins, Hexagonal Keys, Hollow Pipe Plugs. Send today for this Data-Bulletin *up-to-date!*

ALLEN Products sold only through local Allen Distributors.

THE ALLEN MFG. COMPANY
HARTFORD, CONNECTICUT, U. S. A.

ALL-STAR PERFORMER

in
FASTER, EASIER
DE-BURRING
CLEANING
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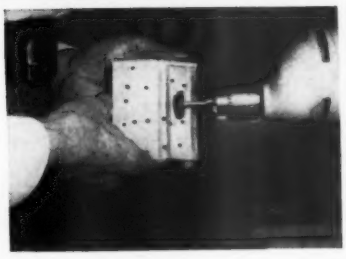
THE *SOFT RUBBER* BINDER *CUSHIONS* THE ABRASIVE

Resilient, "live" rubber binds and "cushions" Brightboy's abrasive all the way through!



De-burring—finishing holes and edges in Alclad part.

The dimensional loss on the material worked is reduced to a minimum. Brightboy's close-tolerance, precision finish frequently serves as the final polish. Brightboy bridges the gap and saves work operations between a grind and a buff.

Easy-to-use Brightboy is made in wheels, blocks, sticks, rods and special shapes for manual and machine operations. No special setups required. Write us if your dealer cannot supply you with our catalogs and prices.

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Turco manufactures more than 225 specialized Industrial Chemical Compounds for every industry. These are used for metal processing, preparation of surfaces for painting and plating, degreasing and decarbonizing of machine parts, removal and prevention of corrosion, descaling, and the maintenance of equipment and buildings.

Consult your local Turco service specialist. He will prescribe the proper type of cleaner for every department.

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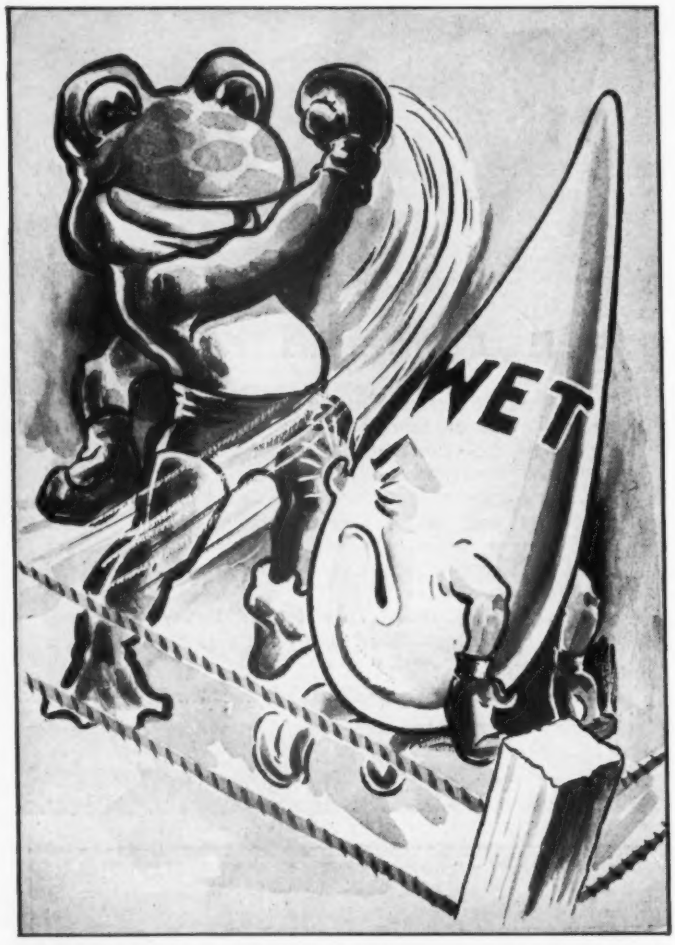
FACTORIES IN LOS ANGELES AND CHICAGO

ALL SET FOR THE WET



FROG BRAND WINS!

Wherever men must work under "wet" conditions, whether indoors or out, Sawyer's Frog Brand Oiled Clothing wins in any comparison of light, flexible, water-resistant clothing.

When you want to be "All Set For The Wet", look for the Frog Brand Trademark. Right now, a large portion of Sawyer's productive capacity is devoted to the War Effort, but it is still well worth while to ask first for Sawyer's Frog Brand.

Write for information to
THE
H. M. SAWYER
& SON CO.
EAST CAMBRIDGE
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Sawyer's

FROG BRAND OILED CLOTHING

sees to it that all War Production Board orders and regulations are complied with. Complaints and other information indicating violations of such orders are reviewed by that department which is also empowered to prosecute cases of non-compliance.

Campaigns to salvage fats, greases, tin cans, and scrap are handled in the field by the Conservation Division. This division also expedites scrapping of obsolete and abandoned items such as bridges, street car lines, factories, etc.; moves scrap from all automobile graveyards in the region; and speeds the flow of scrap from industrial organizations.

The Appeals Department receives and checks appeals for exemptions from the provisions of many Conservation and Limitation Orders, forwarding them to Washington when necessary.

The Redstribution Department has the job of locating, obtaining, and redistributing idle and excessive inventories of critical materials, equipment, and machinery required for war production. If a war plant faces a temporary shut down for lack of some material not obtainable from the usual sources, the Redistribution Department will help get that material without delay.

Designed to help local businessmen, the Smaller War Plants Division and Production Service Department work cooperatively. The Smaller War Plants Division maintains direct contact with distressed plants and district procurement officers of the Army and Navy and other procurement agencies, handling contracts and distributing war work among distressed plants. It keeps records of hours of available time on selected critical tools and allocates idle time of critical tools to relieve bottlenecks. It certifies the ability and capacity of individual plants to perform contracts and locates subcontractors for prime contractors. Under the auspices of both divisions, surveys of manufacturing plants are made and up-to-date facility records of all the plants in the region are maintained. A corps of engineers makes technical investigations to locate and eradicate bottlenecks in production, failures to deliver on schedule, and other production problems.

In addition to the departments mentioned above, there are special services furnished by the Governmental and Legal Departments. The Governmental Department works with state and local governments in obtaining requirements for materials and equipment. Community problems are tackled which, for instance, might involve issuance of priorities for housing, for water works, and other publicly owned utilities.

The Legal Department advises the Regional Director on all legal matters, most of them concerning the interpretation of the orders and instructions of the Chairman and officials of the War Production Board.

Highly important though these duties are, they are part of the normal office routine. From time to time, emergency situations arise, offering serious threats to war production, and the local offices have to handle these, too.

* * *

CRITICAL MATERIALS REPLACEMENTS

(Continued from page 95)

types and sizes of bearings and in solders for a wide variety of joining requirements. We have reduced tin content by 20% or more in most of our solders and have substituted lead-base babbitts containing less than 1% tin for most of our tin-base babbitts

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For EVERY IMPORTANT FASTENING

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KEYSTONE The Largest Stock on the East Coast
FOR
BOLTS-NUTS-SCREWS
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made in the following metals
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EAT AT JOE'S
CHARLIE'S GOOD EATS
CHARLIE'S GOOD EATS
EVERYONE GOES TO CHARLIE'S 'CAUSE HIS REST ROOMS HAVE VICTORIA!
CHARLIE'S GOOD EATS

Specify VICTORIA TOILET TISSUES
Single Fold, Double Fold or Black Core—for dependable quality.
Victoria Paper Mills Co., Fulton, N.Y. Craftsmen in paper-making since 1880.

Reduce Productive Time Losses by PROTECTING HANDS SUBJECTED TO LIQUIDS, CHEMICALS, ACIDS, etc., with Surety Patented Turn-Cuff Gloves

You guard against man-power loss by keeping hands productive. Eliminate acid burns, dermatitis and other costly hand injuries by providing employees with Surety patented Turn-Cuff gloves — normally available in rubber or Sureseal Synthetic. Illustration shows how cuffs turned up repel liquids—keep arms and inside of gloves dry.

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Hundreds of American industries have standardized on Turn-Cuffs. Many safety directors, doctors, and insurance underwriters recommend them because of their extra safety features. Turn-Cuffs produced in Sureseal Synthetic have amazing characteristics to resist usual destructive elements. Send for free literature today.

Largest and Original Producers of Synthetic Gloves
THE Surety RUBBER COMPANY
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and nearly all of our former lead-base babbitts containing 8% tin. Extensive tests have been made and are still going on in connection with the use of a new tin-silver-lead solder containing 15% or less tin for soldering banding wires and commutator necks on motor armatures for the higher temperature services. (Class B insulation). In such soldering, pure tin has been used in the past. Changes in solder and babbitt alloys and their use already have resulted in a saving of more than 10,000 pounds of tin per month.

Molded phenolic handles have replaced cast aluminum in switchboard, control and other apparatus.

On an order for special motors, the Small Motor Division influenced a specification change from aluminum to cast iron—thus 208,000 pounds of aluminum were saved.

Every time a Navy subchaser comes off the ways, equipped with Westinghouse gearing units, 217.8 pounds of critical nickel are saved for other wartime jobs. This saving is made possible by heat treatment of gears with the Westinghouse B.P. process. Straight carbon-steel gears treated by this process possess the same tensile strength and endurance limits as chromium and nickel alloy steels.

In Precipitron cells, steel was substituted for aluminum alloy. This saves 30 pounds of aluminum per cell, a total of 375,000 pounds in the 12,500 units built since the substitution was made.

LEAD COATING ON IRON & STEEL

The use of lead as a protective coating on iron and steel is not new but it is not as common as the more familiar zinc coating or galvanizing. Lead is known to be more resistant to atmospheric corrosion than zinc but the brighter appearance of galvanizing and the difficulty in obtaining a lead coating free from pin holes has retarded its use.

However, recent studies of lead coating processes have resulted in improved technique for hot-dip application which produces satisfactory results for many purposes. It appears that rust stains on the surface of hot-dip lead coated articles are superficial and generally soon disappear since the pin holes are apparently sealed by the products of corrosion.

One process now in commercial use is simple and is done with equipment of the same type as is used for galvanizing, the articles to be coated being pickled scrupulously clean. Another means of depositing lead coatings on iron and steel is electroplating. Under certain conditions, hot dipping results in distortions or undesirable surface stresses which do not occur in electroplated objects. There is an increasing use of electrodeposited lead on laboratory apparatus, linings of gas shells, nuts and bolts, refrigeration and brine tanks, and equipment used in viscose and other industries.

Although lead is not suitable for coatings on objects that require brightly finished surfaces and is not highly resistant to abrasion, its high corrosion resistance, ease of handling and plentiful supply indicate that recent improved application processes will make possible the saving of large quantities of nickel, zinc, cadmium, chrome and tin which have hitherto been required for protective coatings on iron and steel.

Lead coated articles perform best under atmospheric exposure. They do especially well in industrial atmosphere contaminated with the acid fumes of sulphur.

Full information on lead coating practices may be obtained from the Lead Industries Association, 420 Lexington avenue, New York.

"O.K. As Ordered"

—a pleasing report from any assembling department!

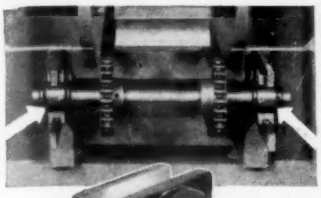
No product is complete till the last part is in place. Any slow-up in the line may be a serious "bottleneck." Due to extreme care in setting up, and in keeping tools sharp and up to size, Newton Screw Machine Products always have a hearty welcome in assembling rooms.

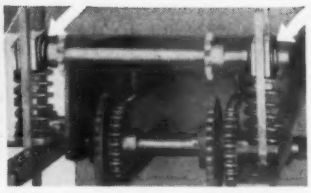
Naturally, when hostilities began, Newton service fit war requirements like a hand in a glove—which accounts for this plant's having run full time on war production ever since.

After the war, we hope to be allowed to give the civilian needs of our friends the same whole-hearted attention it is now our privilege to give to Uncle Sam.

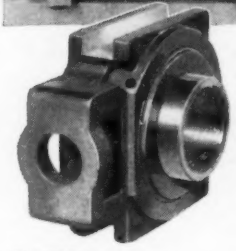
NEWTON SCREW MACHINE PRODUCTS
THE NEWTON MANUFACTURING CO., PLAINVILLE, CONN.

When writing Newton Screw Machine Products please mention Purchasing



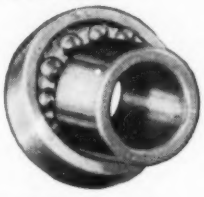


A TYPICAL TEC TAKE-UP INSTALLATION



CJB AHLBERG BALL BEARINGS FOR EFFICIENCY

The TEC Unit



The Bearing

If you prefer Take-Ups with Frame specify TF Series

THESE COMPACT take-up units can be used in any number of installations where adjustments are required.

—Bearings are Full Self-Aligning Type—Will compensate for misalignment without impairing their efficiency.

—Housing is one piece with an easily removable end cap for bearing inspection.

—Large grease capacity—Fewer greasings per year.

—Housing-slides are machined to take standard cold rolled bars.

—Labyrinth Type seals—Frictionless, long wearing and exceptionally effective; keep lubricant in and dirt out.

—Expansion or non-expansion type, optional at no extra cost.

—This TEC Series is available in shaft sizes from 3/4" to 2 15/16".

CJB AHLBERG

AHLBERG BEARING COMPANY

Manufacturers of CJB Master Ball Bearings

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"Safe-Hed" STEEL STAMPS

FOR EVERY INDUSTRIAL NEED

AVAILABLE FROM STOCK

Recommended for 90% of all Industrial stamping needs . . . Matthews "Safe-Hed"* Steel Stamps are safe and the most economical for your stamping application. *Reg. U.S. Pat. Off.

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It ALWAYS Comes Through O.K.

WHEN IT'S SEALED WITH TANGLEFOOT

Long hauls — rough handling — the steaming atmosphere of the tropics or the aridness of desert heat — if the carton will take it, so will TANGLEFOOT, the superlatively strong sealing tape with the grip that never lets go.

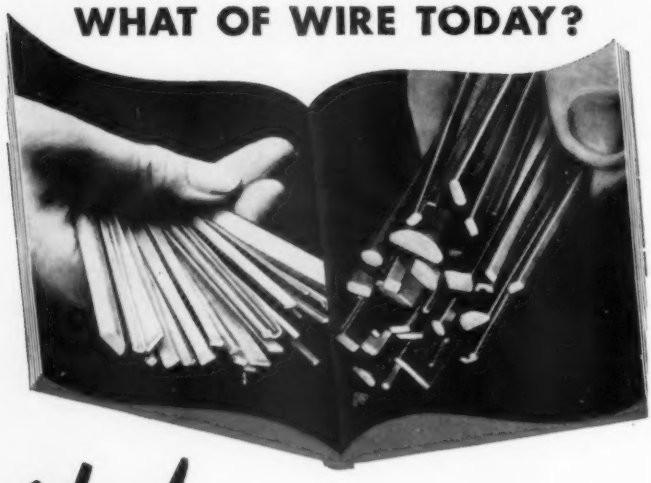
Product protection is important in peace-time, vital in war-time. Use TANGLEFOOT TAPE. It's most economical, too, for its quicker sticking qualities save both time and money. Let us demonstrate the superiority of this tape. Write for samples and informative literature.

THE TANGLEFOOT CO. · GRAND RAPIDS, MICH.

FOR VICTORY Buy War Bonds

TANGLEFOOT GUMMED TAPE

WHAT OF WIRE TODAY?



Yes! WHAT OF WIRE?

The immediate prospect is for little, *if any*, improvement in the delivery or allocation conditions. Be Scotch with your handling of the wire you need. Plan its use. Cut waste.

In Shaped Wire if you have not already adopted standard shapes and analyses, it will be prudent to do so at once.

For General Wire check to see that your requisitions are cut to an irreducible minimum.

For Welding Wire use correct analyses and proper size—lean toward larger sizes. Don't permit bending of electrodes. See that each one is used right down to the holder—and that there is no wasteful excess deposit in the weld.

If we can cooperate in any way, call on us—remembering that we operate in the sincere belief that we serve you best by allowing nothing to interfere with giving the wire needs of the armed forces first call on our production.

PAGE FOR WIRE

PAGE STEEL AND WIRE DIVISION

Monessen, Pa., Atlanta, Chicago, New York, Pittsburgh, San Francisco

In Business for Your Safety

ACCO

AMERICAN CHAIN & CABLE COMPANY, Inc.

BRIDGEPORT • CONNECTICUT

HOW TO PREVENT RUST DAMAGE TO OVERSEAS SHIPMENTS

(Continued from page 89)

removed incident to actual use of the parts. After the parts have been processed, they are wrapped with a moisture proof wrapping to which a sealer impervious to moisture is applied. And then the unit is boxed and identified in detail.

Take a valve for instance: It is made bright clean and a tested protective film applied. After the preventive coating has been applied, the valve is wrapped in what is termed grade A ordnance wrapper, and this is followed by what is known as a Dearborn No. 4 No-oxidized wrapper. Then the package is dipped in Dearborn No Oxid XX or No. 6 No Oxid sealer.

On heavy gears, shafts and other external parts, a protective coating known as Export 2-W is applied, and the parts are wrapped in what is called grizzly bear paper and heavy crepe paper. When parts are brought out of stock and assembled for shipment, they are placed in a strong cardboard carton, this being wrapped in No. 10 No-Oxidized wrapper, and sealed with the XX or No. 6 sealer. This package is claimed to be "absolutely waterproof."

Every replacement or repair part must have adequate protection so that Bombardiers, Rangers, Leathernecks, Troops, Gunners, Engineers, Tank Drivers and the scores of others who are doing the dirty work in the big fight can absolutely depend upon the efficacy of spare parts.

As stated, some manufacturers are doing a good job. Too many are doing a poor job. There can be only one result. So far definite instructions have not come forth as to how and with what materials metals and parts should be protected and wrapped. However, the need for "protective maintenance" is imperative. Specific, mandatory instructions may issue from Washington any day. When they are issued they will undoubtedly be a part of all new contracts, and inspectors will be on hand to see that they are lived up to. It may not be long. Meanwhile, steps should be taken by Purchasing Agents and others to anticipate requirements. And, it may well be repeated, the Corps of Engineers, Spare Parts Branch, Quartermasters Depot, Columbus, Ohio, welcomes both inquiries and suggestions.

WPB REDEFINES REPAIR PRIORITIES

Maintenance, repair and operating supplies, as previously defined in Priorities Regulation 3, are redefined by amendment to that regulation, to bring its definitions into conformity with those of Controlled Materials Plan Regulation 5. Changes effected eliminate the following from the definition of maintenance, repair and operating supplies, regardless of established accounting procedure:

(1) Materials for repair or maintenance of buildings.

(2) Fabricated containers (in knock-down or set-up forms, whether assembled or unassembled), required for packaging products to be shipped or delivered.

(3) Printed matter, stationery and office supplies.

(4) Paper, paperboard and products manufactured therefrom; molded pulp products.

(5) Fuel or electric power.

(6) Office machinery or office equipment.

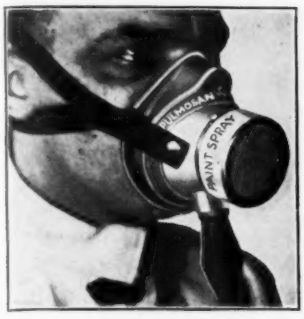
(7) Clothing, shoes or other wearing apparel (with specific exceptions) if made of leather or textiles.

(8) Materials for plant expansion or plant construction.

When writing Page Steel and Wire Division please mention Purchasing

Curb ABSENTEEISM

due to
ACCIDENTS and
HEALTH HAZARDS



PROVIDE ADEQUATE SAFETY EQUIPMENT

There are two ways you can reduce absenteeism caused by accidents and health hazards. First, by energetic safety education; second, by supplying proper safety equipment for every hazardous operation in your plant.

When it comes to Safety Equipment, come to PULMOSAN . . . for a quarter century suppliers of "everything for industrial safety". We can supply dependable safety equipment for every hazard, every occupation, every industry. Submit your safety problems to our engineers for recommendation. Write for our complete Safety Catalog describing hundreds of proven protective devices.

PULMOSAN SAFETY EQUIP. CORPORATION

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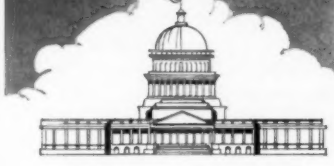
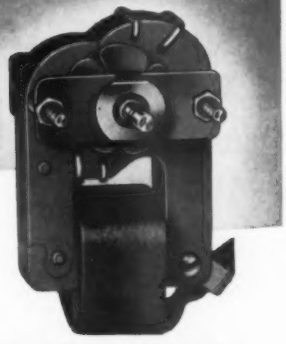
GENERAL INDUSTRIES

Small-Power Motors





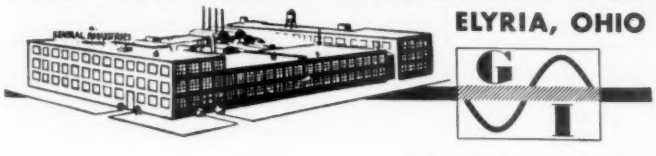
Fully Meet

GOVERNMENT REQUIREMENTS

★ Advanced design, quality materials and precise machining are distinguishing features of all G. I. motors and assure their measuring up to the most exacting specifications. For 30 years they have set the standard of performance for small-power applications. War needs are now taking all of G. I's production of motors, together with a variety of precision-made electronic devices. The assistance of G. I. engineers is freely available to manufacturers producing on Government orders. Let us discuss your problem with you.

THE GENERAL INDUSTRIES CO.

ELYRIA, OHIO



Today her shears are Unishears

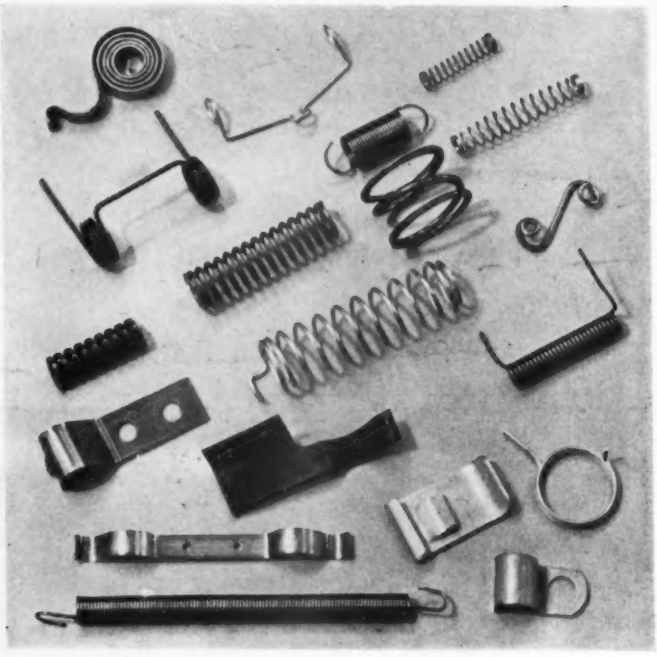
Yesterday her materials were gingham and taffeta.

After John joined his regiment, she wanted to help, too. A nearby airplane factory offered opportunity to help build fighting ships to protect John.

Today, her shears are Stanley Unishears . . those clever metal cutting shears that follow the most intricate pattern in sheet metal. Fast, careful cutting takes on a new significance when she reads the combat record of the planes she helps to build.

Hundreds of thousands of others like her are helping to win the war of production. We are proud to be able to furnish the electric tools which in the skilled hands of women and men are speeding the day when all can return to their peaceful pursuits. Stanley Electric Tool Division, The Stanley Works, New Britain, Connecticut.

ARMY (E) NAVY 1843 STANLEY TRADE MARK 1943



The SPRINGS *of War*

● To the arduous tasks of war — in which lives may depend on the exactitude with which a minute *spring* is fashioned, and the precision with which it does its work — Reliable now devotes its major attention. Reliable Springs by the million go into aircraft, combat tanks, small arms, ammunition, and other equipment.

For years the "tough jobs" of spring design and production have been our specialty. We are proud of our expert staff of men — engineers, metallurgists, physicists, tool and die makers, machine operators — and especially are we proud of the many Reliable women who have so capably taken over for men called to the colors .

Later, when Victory is won, countless peace-time products will benefit from the skill, the research, and the scientific progress made under the severe conditions of war production. Then — as now — Reliable will mean *reliability* in springs.

Send us your specifications.

THE RELIABLE SPRING & WIRE FORMS CO.

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YOU CAN RELY ON
Reliable Springs
ROUND AND FLAT WIRE SPRINGS
CLIPS HOOKS BENDS
LIGHT STAMPINGS

ENGINEERING ASSISTANCE ON COMBUSTION PROBLEMS

Mr. C. A. Reed, secretary of Bituminous Coal Research, Inc., Southern Building, Washington, advises that the services of its Technical Advisory Board which have been offered to the Federal Government's Solid Fuels Coordinatory War Production Board, and Petroleum Administrator, in connection with the conversion to coal of industrial oil-burning equipment, and the services of combustion engineers in the employ of bituminous coaal, will gladly be extended to industrial and commercial industries. "There is no charge for the help" says Mr. Reed. "We want to be sure coal customers get the right kind of equipment and coal during these trying times."

* * *

"PRICE-MINUS" CONTRACTS

(Continued from page 83)

paid to contractors for construction of this type of vessel have been virtually cut in half in the more recent contracts, and many of the earlier contracts have also been adjusted downward.

The total cost of the Liberty ship is estimated to be of the order of $1,700,000 to $2,000,000 each. With the emergency shipyards that are now in full production, the cost is falling considerably under the $2,000,000 figure. The original minimum fee was $60,000, or approximately 3% of the top estimated cost. The normal fee, in case the ship is built within the estimated number of man-hours, was $110,000 and the maximum fee obtainable if the vessel was built with substantially less than the stipulated number of man-hours, resulting in a considerable saving in labor cost, was $140,000 or about 8%.

On current Liberty Ship contracts, the minimum fee is $30,000 or approximately 1½%, the normal fee is $55,000 or about 2¾%, and the maximum $70,000, or about 3½%, based on a $2,000,000 cost.

Roughly these figures represent the contractor's profit before Federal taxes. Actually the net profit remaining after taxes may be a fraction of 1%.

Under the price-minus and Liberty Ship types of contract, expenditures made by the contractor and subject to reimbursement by the Commission are under

(Continued on page 262)

Immediate Shipments of
BARS-PLATES
SHAPES-SHEETS
From Stock
We also offer —
Quick shipments of flame-cut plates in irregular shapes, circles, discs, etc.
DAVID SMITH STEEL CO. INC.
234 46th ST. Brooklyn N.Y.

ONE OF THE "400"

MEET THE ELITE of the plane busters —the 20 mm. anti-aircraft shell. On land or sea it's the answer to a gunner's prayer. When he cuts loose with his anti-aircraft cannon better than four hundred of these lethal shells go streaking skyward *every minute!*

A. S. Campbell is proud to be one of the concerns selected by the Army and Navy to make 20 mm. shell cases. Proud of the privilege of making other war essentials, too—for jeeps, tanks, planes and fighting ships.

Call on A. S. Campbell.

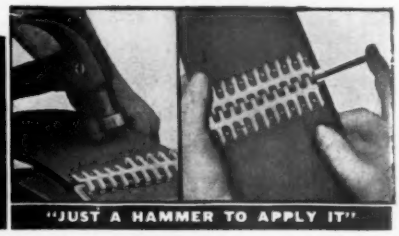
With our enlarged plant and new equipment we are ready to take on more production that will speed the inevitable victory. Call on us today. And call on us tomorrow when you get the green light on civilian goods again. If it's stamped out of metal, or if it's plastics or plated, A. S. Campbell can make it!

We appreciate your pre-war business and we look forward to your post-war requirements.

A. S. CAMPBELL COMPANY, Inc., East Boston, Mass.

A.S. CAMPBELL can make it!

BELT LACING and FASTENERS for transmission and conveyor belts



"JUST A HAMMER TO APPLY IT"

ALLIGATOR

Trade Mark Reg. U. S. Pat. Office

STEEL BELT LACING

World famed in general service for strength and long life. A flexible steel-hinged joint, smooth on both sides. 12 sizes. Made in steel, "Monel Metal" and non-magnetic alloys. Long lengths supplied if needed. Bulletin A-60 gives complete details.

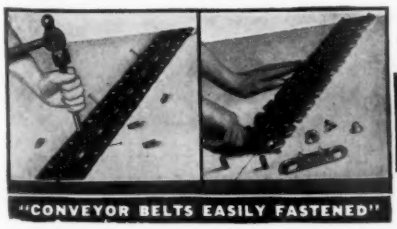
FLEXCO HD

BELT FASTENERS AND RIP PLATES

For conveyor and elevator belts of all thicknesses, makes a tight butt joint of great strength and durability. Compresses belt ends between toothed cupped plates. Templates and FLEXCO Clips speed application. 6 sizes. Made in steel, "Monel Metal", non-magnetic and abrasion resisting alloys.

By using Flexco HD Rip Plates, damaged conveyor belting can be returned to satisfactory service. The extra length gives a long grip on edges of rip or patch. Flexco Tools and Rip Plate Tool are used. For complete information ask for Bulletin F-100.

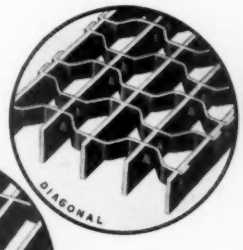
Sold by supply houses everywhere



"CONVEYOR BELTS EASILY FASTENED"

FLEXIBLE STEEL LACING CO.

4697 Lexington St.
Chicago, Ill.



Specify TRI-LOK

OPEN STEEL FLOORING • SAFETY STEPS
CONCRETE ARMORING T. TRI-LOK

DRAVO CORPORATION
300 PENN AVENUE, PITTSBURGH, PA.
REPRESENTATIVES IN PRINCIPAL CITIES

Full descriptive catalog of Tri-lok Grating, Safety Treads and other products on request.

BILL, THE PLATFORM MAN

It is 4 minutes to midnight—11:56 P.M.—in a Railway Express terminal. The man is a Railway Express platform man, one of many thousands stationed around the country. The package is a shipment of medical instruments. The destination—a military secret.

The package might have been some other type of war material or a commercial shipment to some factory which must "keep going". It might have been...anything.

To Bill, the platform man, and to any other of the thousands of employes who work for Railway Express, their job is to *keep things moving* so that trains and vehicles may maintain their ceaseless deliveries to the four corners of the nation.

(Continued from page 260)

constant scrutiny. Auditors are stationed permanently in every shipyard and are supervised by regional construction auditors. Subcontracts and purchase orders issued by the contractor (except very minor orders) require approval by the Commission's resident representatives at the plants. All orders exceeding a stipulated minimum require approval by the Commission's Regional Directors of Construction or their properly delegated deputies. Salaries, to be reimbursable under the contracts, must be approved, and no excessive salaries, either as to individuals or as to total salary rolls, are allowed. Wage rates are required to conform to the wage stabilization agreements currently in effect.

Guarding the Public Interest

Close inspection is one of the fundamental policies of the Commission. A competent staff of inspectors is assigned to each shipyard. In addition, the vessels produced must pass inspection by the American Bureau of Shipping and the Bureau of Marine Inspection and Navigation. This triple inspection affords small opportunity for a contractor who might be minded to do so, to skimp on materials or attempt labor shortcuts in an effort to save on cost and enhance his profit at the expense of the product.

That these measures and these type of contract are effective not only in producing the greatest output of ships that the world has ever witnessed, but in inducing economy as well, is evidenced by the fact that December figures for the principal yards building Liberty Ships show an average cost per deadweight ton of about $166 which compares with some $205 per deadweight ton for the Hog Island vessels, built during the first World War. In fact the whole Liberty Ship output to the end of 1942, even including the relatively high cost vessels that comprised the early product of the emergency yard, averaged only $185 per ton, from which some indication may be drawn of how costs are coming down.

Limitation of Profits

Profit limitation has been an objective of the Maritime Commission since its inception. Particularly is this true of the period since the outbreak of war in Europe and even more definitely has it been imposed since the attack on Pearl Harbor on December 7, 1941. In brief, it has been the policy of the Maritime Commission that there should be no opportunity for the making of unconscionable profit or a repetition of the nation's experiences in the First World War in this regard.

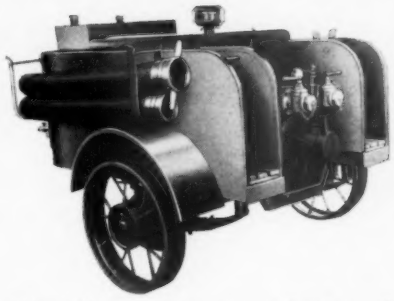
Practically all contract made by the Maritime Commission, including the older fixed price form, still in use for some situations, carry a profit limitation clause. When Congress repealed the 10% limitation of the Vincent-Trammel Act, applicable to Naval vessels, the Commission suggested that the similar limitation set up by the Merchant Marine Act of 1936, under which the Commission operates, be retained. Subsequent legislation applicable to Maritime Commission shipbuilding contracts has contained profit limitation provisions suggested by the Commission.

Experience has shown that the price-minus contract, in addition to inducing economy, greatly facilitates the financing of the contractor's working-capital needs. In fact it reduces materially his need for working capital, since rapid reimbursement of his cash expenditures is possible and is in fact effected in practice. This carries with it too a high degree of protection to subcontractors

(Continued on page 264)

Those WHEELS You NEED

Fire pump trailer with steel tired spoke wheels designed for later replacement with rubber tired wheels.



WE CAN SUPPLY THEM IN STEEL SPOKE

with pneumatic, cushion, or solid rubber tires — or steel tires.

CAST SEMI-STEEL

all-metal or with molded-on solid rubber tires.

PRESSED STEEL

with steel rims or rubber tires (pneumatic, cushion or solid)

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COMPLETE INFORMATION ON REQUEST

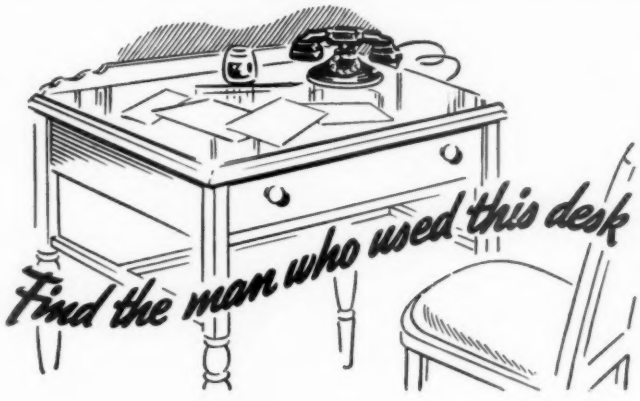
We offer you a competent and prompt source of supply for all types of round, true and lasting wheels—**RUBBER TIRED WHEELS AVAILABLE ON WAR ORDERS ONLY.** Our facilities enable us to produce in whatever quantity you require. Experienced French & Hecht engineers will be glad to assist you in the design and testing of the wheel types best suited to your needs. Your inquiries are invited.

Please Address Dept. P

FRENCH & HECHT, INC.

Wheel Builders Since 1888

DAVENPORT, IOWA



He's somewhere in Baltimore or Washington, keeping the business appointments he made by telephone from his room at the Lord Baltimore. He'll be back this evening because he'll be in this territory for several days; because he finds the Lord Baltimore convenient to Baltimore's war industries and official Washington and because the Lord Baltimore is the hotel that suits his rather discriminating taste.

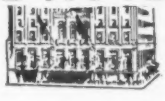
Thinking it over—he could be you!

We want you to have the best room available. Wire a reservation and we'll see that you get it.

The LORD BALTIMORE HOTEL

BALTIMORE • MARYLAND

700 rooms—each with radio, tub and shower



Guided by DECALS

Today Meyercord Decals are playing a vital role in guiding —and guarding—giant bombers through three-dimensional space. Certain bombers use Meyercord Decals in as many as 233 places. Others use decals for operating instructions, dial markings, numerals and exterior insignia. Still others use fluorescent markings on the instrument dials themselves. When daylight fades they are still visible to pilots and flight engineers through the use of "black light". Uncle Sam has found decals preferable—under test. So will you!

Meyercord Decals will help guide *your* engineers to time-and-material savings. They provide full-color, high-visibility, tamper-proof identification for nameplates, dials, patent data, serial numbers, etc., eliminating the use of critical materials. They are quick and easy to apply, adapted to any surface, are uniform, durable and washable. No protruding edges, no screws, rivets or bolts. The blue prints of many manufacturers specify Meyercord Decals right at the start. Free engineering and designing service. Write Department 1094

There's a Decal for every identification job. Special problems invited.

50th Anniversary 1943 DECALS SAVE METAL

FAST • COLORFUL • DURABLE IDENTIFICATION

MEYERCORD DECALS

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Invisible Firemen
FIGHT YOUR FIRE . . . . BEFORE IT STARTS

Designed to eliminate automatically the dangerous results of carelessness and forgetfulness. Protect Plants—Reduce Insurance Rates.

JUSTRITE Approved SAFETY CANS
The safe, sensible way to handle and store explosive or 'flammable liquids. Large nozzle with special lip — easy to fill and pour without spilling — no funnel needed. Body: heavy sheet steel. Nozzles and handles malleable iron. Baked enamel finish. 7 sizes, 1 pint to 5 gallons. Approved, inspected and individually numbered and labeled by Underwriters' Laboratories, Inc.

SAFETY FILLING CANS
Same general construction as Justrite Safety Cans but equipped with flexible metal spout hose for safe and easy pouring of 'flammable liquids. Air vent assures even flow without back pressure. Easily filled from hose of gas pumps thru separate filler opening. 4 sizes — 5 to 20 quarts. Approved and listed by Underwriters' Laboratories, Inc. Approved by Associated Factory Mutual Fire Insurance Co.

OILY WASTE CANS
The common sense container for oily-waste or other 'flammable material. Sturdily made of 24-gauge steel, 1/8" band iron legs and handles. Made with or without foot lever. Lid automatically closes when can is not in use. Approved by Underwriters' Laboratories, Inc. and Associated Factory Mutual Fire Insurance Cos.

JUSTRITE Twin-Bulb ELECTRIC LANTERN
The most dependable lantern ever built for industrial use. Powerful 662 candle power forward beam plus light to sides at the same time from the same bulb. Twin-bulbs reduce danger of light failure — just flip the switch and second bulb is lighted instantly. Listed by Underwriters' Laboratories, Inc. for safe use in the presence of 'flammable gases and other Class 1, Group D hazardous locations. Approved by U. S. Bureau of Mines.

Ask your jobber or write for catalog of Justrite Safety Products

JUSTRITE Manufacturing Co., 2091 N. Southport Ave., Chicago, Ill.

JUSTRITE *Safety Products*

SAFETY CANS · FILLING CANS · OILY WASTE CANS
APPROVED SAFETY ELECTRIC LANTERNS

(Continued from page 262)

and suppliers, since the shipbuilder has every reason to pay his bills promptly and can rely on a steady and sure flow of funds from the Government as he submits, at frequent intervals, his reimbursement vouchers.

Although the price-minus contract form safeguards the efficient and honest contractor, which is right and just under existing emergency conditions, it certainly puts no premium on extravagance or incompetency, which often has been asserted to be one of the weaknesses of the ordinary cost-plus form. On the contrary, the price-minus conract is designed to place a premium upon managerial efficiency, for it is largely through this medium that the principal savings are effected. The basic costs of materials and labor are virtually the same in all cases. It therefore so operates that proper management and supervision may be productive of greater profits for the contractor.

Whatever else may be said for the price-minus contract, it seems to be the most satisfactory safeguard that has been devised thus far for the protection of all parties to the contract. It certainly will not produce another generation of war profiteers, nor will it bankrupt the contractors.

* * *

PREPARE FOR WAR CONTRACT RENEGOTIATION

(Continued from page 87)

Premiums paid on compensation insurance, unemployment insurance, etc., are items of labor costs, but an equitable portion of self-insurance costs may be charged if not higher than rates of regular insurance companies for similar service.

Values of assets must be realized before being charged as costs, amortization of unrealized appreciation is out.

Material costs include all purchased materials and fabricated parts entering directly into the contract, also incoming transportation costs.

Benefits available on purchases will be deducted by the government whether the purchasing department takes advantage of them or not. They include such items as trade discounts, rebates, allowances, credits, commissions, refunds, bonuses, cash discounts in excess of 1%, cash discounts accruing to prime contractors on sub contracts, and the like.

Scrap must be credited at current scrap prices, whether or not the scrap is sold.

Supplies generally must be non durable materials used for production purposes, lubricants and small tools are examples, but there is no objection to continuing to list some raw or other materials as supplies if this has been the custom of the contractor and if the allocation of their costs is clear.

Advertising is a cost if placed in trade or technical journals with the intent to keep such journals alive as essential disseminators of trade and technical information for the industry, but advertising is not a cost if intended to sell goods to the government or to sell commercially. To be a cost, advertising must be institutional or of the industrial kind generally known as "know how" and must be placed in a technical or trade papers of recognized informative value to the industry.

(Continued on page 266)

For *RUSH* War Jobs Order Cullman Sprockets

More than 50,000 Cullman Sprockets are available from stock for immediate delivery.

Because of specialized equipment and experience, Cullman Sprockets can be made to your specifications in a relatively short time, and at minimum cost.

Write, telephone, or wire Cullman on any sprocket requirements.

CULLMAN WHEEL CO.
1352-P ALTGELD STREET, CHICAGO, ILLINOIS

Put your SEALING PROBLEMS UP TO **FEL-PRO**

Industries of every type are calling on Fel-Pro for help in solving war-intensified problems on Gaskets, Mechanical Packing and Stripping.

Most insistent has been the demand for a material to replace rubber and other critical materials. After thorough research and testing, Fel-Pro engineers developed entirely new gasket materials — such as Syntoflex and Lignoflex. More than substitutes, for certain requirements, these are actually *better* gasket materials, with superior characteristics — more resistant to strong chemicals — not affected by petroleum products — better able to withstand increased pressures.

SEND FOR FREE MATERIAL SAMPLE FOLDER

Contains actual samples of 36 Fel-Pro materials, each designed for specific types of sealing requirements. Full descriptions, data, many application suggestions. If none of these materials solve your sealing problems, Fel-Pro's Special Development Staff is at your service.

Helping
"KEEP THE POWDER DRY"
One of Fel-Pro's new sealing materials is meeting military needs for an ammunition box sealing material with rubber-like characteristics, but which, in addition, is resistant to poison gas seepage.

★ ★ ★ ★ ★ ★ ★
Put It Up to FEL-PRO
for solutions to problems involving GASKETS, MOULDING, STRIPPING, MECHANICAL PACKING and other types of Sealing Materials.

Put it up to FEL-PRO

FELT PRODUCTS MFG. CO.
1514 CARROLL AVE., CHICAGO, ILL.

CONSERVE YOUR TOOLS

THAT HAMMER IS TOO LIGHT FOR THAT JOB! GET ONE WITH THE RIGHT WEIGHT AND SWING!
CARELESSNESS IS THE MEANEST FORM OF SABOTAGE!

10½ x 15" reproductions of the above illustration for posting in your shop, will be sent to you upon request.

This advertisement is a part of The Fairmount Tool Victory Drive, tool conservation campaign.

Hand Tools • Special Tools • Forgings

the FAIRMOUNT TOOL & FORGING CO.

★ ★ ★ 10611 QUINCY AVE. CLEVELAND, OHIO

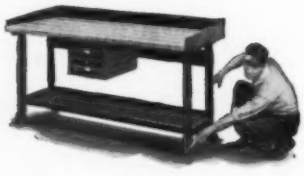
IT IS OUR BELIEF
WE HAVE THOUGHT OF EVERYTHING YOU WOULD WANT IN A WORK-BENCH

Fig. 928 "Hallowell" Work-Bench Laminated wood top. Drawer is extra Pat'd. & Pat's. Pend'g.

HALLOWELL
SHOP EQUIPMENT

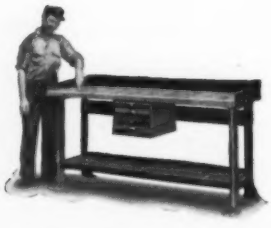
In the "Hallowell" line we have developed 1367 different ready-made work-bench combinations from which can be selected a type to meet almost any shop requirement. With this broad selection to choose from you can save time and money, too, by buying "Hallowell" instead of fussing around and building your own work-benches. Our Shop Equipment catalog will help you choose . . . send for a copy.

Choice of five leg heights and widths to meet your particular requirements.



Strong flanged and ribbed leg construction insure absolute rigidity without costly bolting to floor.

Work-Benches can be furnished with one, two or three drawers, with locks and keys.



Tops may be of smooth, laminated wood, Masonite or steel if advantageous.

STANDARD PRESSED STEEL CO.
JENKINTOWN, PENNA. BOX 590
— BRANCHES —
BOSTON • DETROIT • INDIANAPOLIS • CHICAGO • ST. LOUIS • SAN FRANCISCO

(Continued from page 264)

The most favorable point in the renegotiation set up is that the government definitely intends to offer incentives for efficiency, for informing industry through trade papers, and for sound operating methods in general.

HOW TO HANDLE THE SALE OF SCRAP

(Continued from page 85)

Brass, Goodyear Tire and Rubber Co., and others. In the case of scrap contract holders where the cash required runs into large sums of money involving almost continuous shipments during a month, a cash balance is required to be in our possession at all times equal to 40% of the current month's business. Normally, the balance would be 25%, but due to the tonnages in transit, the routing of checks from the purchasing department to the treasury department, holidays, etc., an extra 15% is used over the theoretical 25% or 40% in all.

Each week, the purchasing department checks with the accounting department to determine the unused balance and requests for additional funds are made to keep the 40% intact. This is done to relieve the pressure on the bank balances of the buyers or contract holder and not tie up too much working capital uselessly. In some cases, a contract holder keeps a specified deposit intact but is required to pay our invoices not later than 48 hours after the receipt of same. These plans are equivalent to cash in advance but modified as outlined above only to selected buyers holding yearly contracts requiring the use of capital of $10,000 per month and over, and of good financial ratings.

Some idea of the magnitude of our scrap sales may be obtained from the following excerpt from the East Pittsburgh purchasing department annual report for the year 1941.

Sales	*East Pittsburgh*	*All Plants*
Ferrous	$799,418.00	$1,566,080.00
Non-ferrous	300,154.00	801,344.00
Miscellaneous	12,294.00	64,416.00
Total	$1,111,866.00	$2,431,830.00

The above figures do not include large quantities of salvaged materials returned to the factory for re-use, such as non-ferrous scrap to Linhart Works cast iron and steel scrap to Trafford foundry and low phosphorus plate to several metal working departments.

WHEN THE FROST IS ON THE PUNKIN

(Continued from page 98)

the added burden and expense. But you don't convince the government and you don't carry your share. If you had said, when you organized your combine: "I have fifty key men and ten thousand workers. These are not only employees, but partners. My financial man, my manufacturing manager, my sales manager, my Purchasing Agent—these are not employees, but part-

(Continued on page 268)

Plus X

Because of transparent plastics . . . *By Reynolds*

BOMBS
SPEED
ARMOR
ALTITUDE
RANGE
VISIBILITY

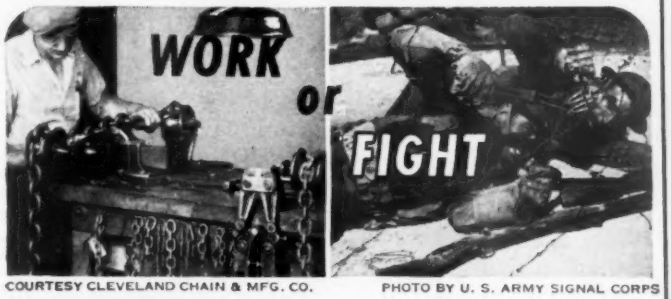
Plus X is also prominent in the complete service given by Reynolds experienced organization. Light weight war noses, canopies, blisters, etc., that give fighting men many pluses are indicative of our versatile manufacturing ability. Specializing in the sound, fundamental application of plastics we are equipped to . . . design or redesign your product, and engineer it through to completion from design board to finished item.

By Compression — Injection — Extrusion or Sheet Forming

INVEST IN WAR BONDS — NOT BONDAGE

Reynolds Molded Plastics

CAMBRIDGE, OHIO, U. S. A.
SALES OFFICES IN ALL PRINCIPAL CITIES
DIVISION OF REYNOLDS SPRING COMPANY
JACKSON, MICHIGAN



COURTESY CLEVELAND CHAIN & MFG. CO. PHOTO BY U. S. ARMY SIGNAL CORPS

PORTER *BOLT CLIPPERS DO BOTH*

From the bench to the battlefront, from bolts to barbed wire, Porter Clippers are meeting every test. These two-hand portable metal cutting tools are unequalled for power, speed and ease of operation in the cutting of bolts up to ¾", rods, hard steel, wire, stranded cable or chain, etc. Specially designed Porter tools to meet most every metal cutting need — in the most minute-saving, money-saving, man-saving way. Porter cutters are products of more than 60 years research and experience in the specialized skill of fine tool making.

Write for illustrated catalog with valuable information.

The Army-Navy "E" — an honor all Porter men and women pride.

(Note: We are using every available man, twenty-four hours a day, to meet Government requirements, and especially to meet our jobbers' needs with the earliest possible shipments permissible.)

H. K. PORTER, INC.
EVERETT, MASS.

Orange Core Goes to War!

Manufacturers of planes, tanks, guns, instruments, electrical equipment, and hundreds of other war products are finding ORANGE CORE the best of sealing tapes for their shipments. It moistens fast, sets fast, and sticks fast. Its superiority cuts down waste and damage, saves time, materials, and money. Whether your war product is bombers or bolts, ORANGE CORE can serve you, too. Ask your paper merchant to supply you today — or write us.

ORANGE CORE
Sealing Tape

Moore & Thompson • Div. Hudson Pulp & Paper Corp. • 220 E. 42nd St. N. Y. C.

"We'll deliver 'em"

"...if you produce 'em!"

"The production lines will determine whether we hold the battle lines," said Donald M. Nelson.

Our fighting men will "deliver the goods" if we'll produce them and transport them to the vital points where they are needed.

So it's up to us back home to exert every effort to supply torpedoes, guns, ships . . . everything our fighters need. Let's go, America!

THE GARLOCK PACKING COMPANY, PALMYRA, NEW YORK

Manufacturers of GARLOCK Packings, Gaskets and KLOZURE Oil Seals

In Canada: The Garlock Packing Company of Canada Limited, Montreal, Que.

GARLOCK

ners. They can't get along without me; but, by Jiminy, I can't get along without them. We, the key men, the workers and I are all necessary to one another. I want them all to feel the same way."

If you had organized your big corporation so that these considerations were an integral part of the whole —that the security of the workers was deemed as important as dividends; that human replacements are something different from machinery replacements; that you can't honestly junk humans as you junk machines —I say, if you had planned your organization so that jobs and futures were secure; and put the same thought and energy and ingenuity on the safe and graceful retirement of each and every employee as you did on the earning of dividends, both workers and dividends would have been secure.

And a little "frost on the punkins" of Smith, the Purchasing Agent, and all the other Smiths, would have been, not a warning, but a source of gratification.

* * *

WHAT THIS WAR IS DOING TO PURCHASING

(Continued from page 80)

industry may find an old company in an altogether new field. In some consumer goods lines, about all that is left today is a brand name, and the value of those brand names may have vanished when we got back to peacetime manufacturing. Little companies will have become big companies, changing the competitive balance. New industries are bound to arise and assume new importance. Prefabricated housing and commercial aviation are examples that come readily to mind as logical possibilities, and others are still in the laboratory stage. There is the whole field of plastics and other synthetic products, impregnated plywood, new alloys, and the like.

In entering this period, we shall not forget or discard what we have already learned about purchasing, but we shall not go back to pre-war standards as the last word, the beginning and end of good practice in buying. If that is our ambition, we are disregarding the lessons of the present. This war, and its effect on purchasing, is more than an incident. Like World War I, it is a formative experience and the beginning of a new era.

Reacting to Experience

There were some buyers in the First World War who remember nothing beyond the romance and adventure of riding a freight trains so as to bring a shipment into their plant. Others also rode the freights—an accepted method of expediting in those days—but they were thinking as they rode, and saw the opportunities of scheduling and planned purchasing and the development of good industrial relations that might make it unnecessary in a future emergency.

Some accepted standardization grudgingly because it was the only way to get goods, but went back to their own special specifications as soon as the mills would take the orders. But others went on to standardize and simplify all their requirements according to commercial standards, thereby increasing competition, permitting quantity purchases, and reducing inventories.

All that some remember is being stuck with big inventories of pyramided orders that wiped out the war profits and disrupted markets for months. Others saw the importance of an economic basis for their planning,

instead of hunch, and of buying cycles coordinated with the course of business cycles, and were enabled by this means to navigate successfully the subsequent boom and depression years as well.

Some trusted to fate to develop new industries and new materials in providing new sources and outlets for their own operations. Others decided that materials are the purchasing man's responsibility, and became a constructive force in shaping the destiny of their respective companies.

Today's Opportunity

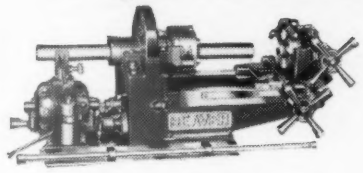
All of these men have their counterparts in the present situation. They may be chafing under some unnecessary and burdensome limitations and regulations, but while some of them are looking back to the "good old days" in the vain hope that they will presently return, others are bending every effort to play the game under the new rules. And meanwhile they are learning that there is something of permanent value in this shifting of emphasis from procurement to control, from cost to utilization, from blanket coverage to accurate scheduling. They are learning, in some industries, and in respect to some materials, that perhaps they can get along very well on a 30-day inventory, and they are developing the means of doing it.

These are the men who know that this war is doing something to purchasing and is contributing something constructive to their experience, and they are going to be ready for whatever changes the future may hold in store. They know that materials are and will continue to be the responsibility of the purchasing officer, and they are not going to surrender that responsibility to the accountants, or let it slip back into the production department where it was held thirty years ago when Purchasing Agents were traders and clerks in fact as well as in reputation. They know that this would be a backward step not only for themselves, but for their companies and for industry as a whole.

In Signal Officers Training Camp during the First World War, I served under probably the most bitterly disappointed officer in the entire Army. He was a West Point graduate, ranking high in his class, a career man in the military profession, assigned to the routine duty of drilling a crowd of temporary amateurs—and not even in his own chosen branch of the service. He resented the fact that he was held in a Texas training camp while the science of warfare was being remade on the fields of France. As a professional soldier, he was missing the opportunity of a lifetime. "For the rest of my days," he said, over and over again, "they'll all talk about how it was done in France, and I wasn't even there to see it happen." Shortly after the Armistice, he resigned from the service because he felt that that lost opportunity had spoiled his professional career.

Career men in purchasing today have no such cause for complaint, for they are in the thick of the campaign in which purchasing science is being remade, and in which the rules for the ensuing era are being formulated. They have an unparelleled opportunity to help shape the future of their chosen calling, to make it an even greater and more potent force in industrial management than it has been in the past. It will take faith and flexibility, confidence and vision, a stout purpose and an open mind, to achieve this end. We know the craft that is now entrusted to our guidance. A firm hand on the tiller and a steady sight on the landmarks that are even now looming over the horizon will carry us through the troubled waters to clear sailing ahead. Purchasing—and all industry—has need of these qualities today.

The A-B-C of Pipe and Bolt Machines

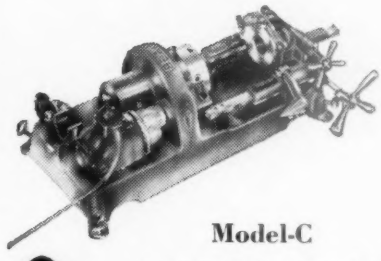


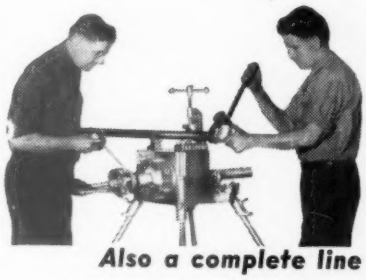
Model-A

A high-speed heavy-duty deluxe Pipe and Bo't Machine. Range ⅛ to 2-inch—up to 12-inch with geared tools and drive shaft. Bolts, ¼ to 2-inch. Wt. 415 lbs. Ask for Bulletin-A.

Model-B

A compact utility Pipe and Bolt Machine combining many features of Model-A with the easy portability of Model-C. Range ⅛ to 2-inch—up to 8-inch with drive shaft and geared tools. Bolts up to 1½-inch. Weight 280 lbs. Ask for Bulletin-B.





Model-C

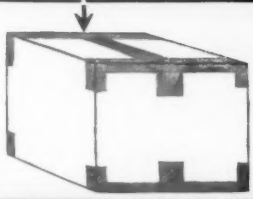
A sturdy little Power Unit

Converts Hand Pipe Tools into Power Tools from ⅛ to 8-inches. Threads 8-inch in 6 minutes. Threads bolts up to 1½-inch. Equipped with automatic chuck wrench ejector—a safety feature. Two men can use it at the same time without interference. Easily portable—weighs about 150 lbs. Write for Bulletin-C.

Also a complete line of hand tools.

BEAVER PIPE TOOLS

443 GROW AVE., WARREN, O.



Never before have shipments been so valuable nor shipping conditions so hazardous. The rugged strength of SAFETEX GUMMED TAPE—its tremendous power to take hold and hang tough — insures every container a safe delivery.

Made by CENTRAL PAPER COMPANY, MENASHA, WISCONSIN.

PULL-TAB OPENER IN EVERY ROLL
SAVES TIME AND TAPE

SAFETEX
HERRINGBONE GUMMED
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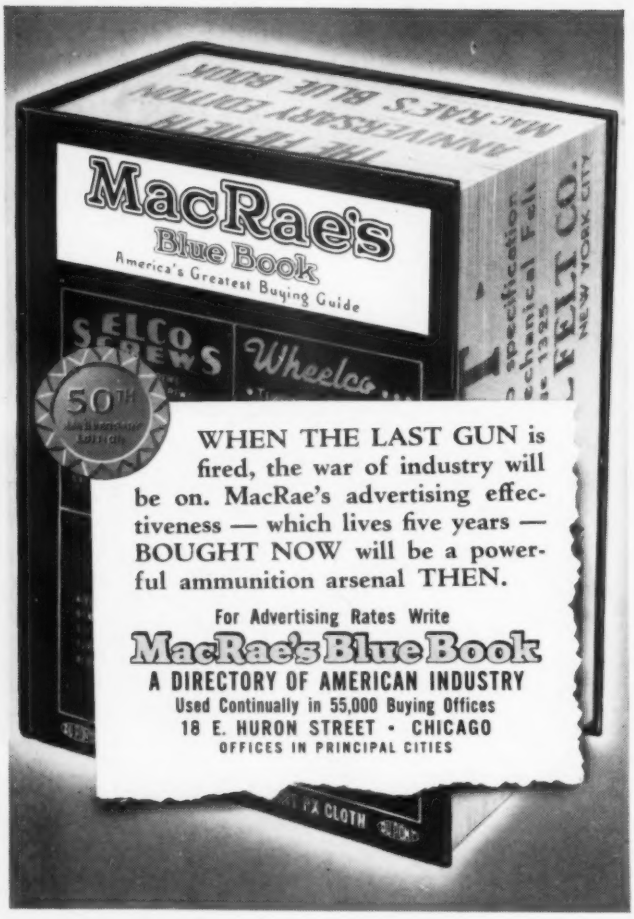

WHEN THE LAST GUN is fired, the war of industry will be on. MacRae's advertising effectiveness — which lives five years — BOUGHT NOW will be a powerful ammunition arsenal THEN.

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A DIRECTORY OF AMERICAN INDUSTRY

Used Continually in 55,000 Buying Offices

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OFFICES IN PRINCIPAL CITIES

FINE DIAMONDS

Since 1912 we have been direct importers of fine diamonds. Our values are outstanding. Selections sent for inspection without obligation.

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ESTABLISHED 1912

Importers of Diamonds and Watches
Distributors of Jewelry, Silverware,
Luggage and Giftwares

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FOR INDUSTRY'S EVERY NEED

THE KRON CO.
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SIMONDS for GEARS

SINCE 1892

SIMONDS and Quality Gears — known for half a century. All types; cast and forged—steel, gray iron, bronze; also silent steel, rawhide and bakelite.

Write for information.

RAMSEY Silent Chain Drives and Couplings

THE SIMONDS GEAR AND MANUFACTURING COMPANY

25th and Liberty Sts. Pittsburgh, Pa.

The Quickest Solution to Metal Working Lubrication Problems

D. A. STUART OIL CO.
LIMITED
2727 So. Troy Street,
Chicago . . . . Illinois

SERVICE OFFICES AND WAREHOUSES IN ALL PRINCIPAL METAL WORKING CENTERS. *Write for the address of one nearest you.*

THE PURE OIL COMPANY, *Chicago*

A COMPLETE LINE OF INDUSTRIAL PETROLEUM PRODUCTS

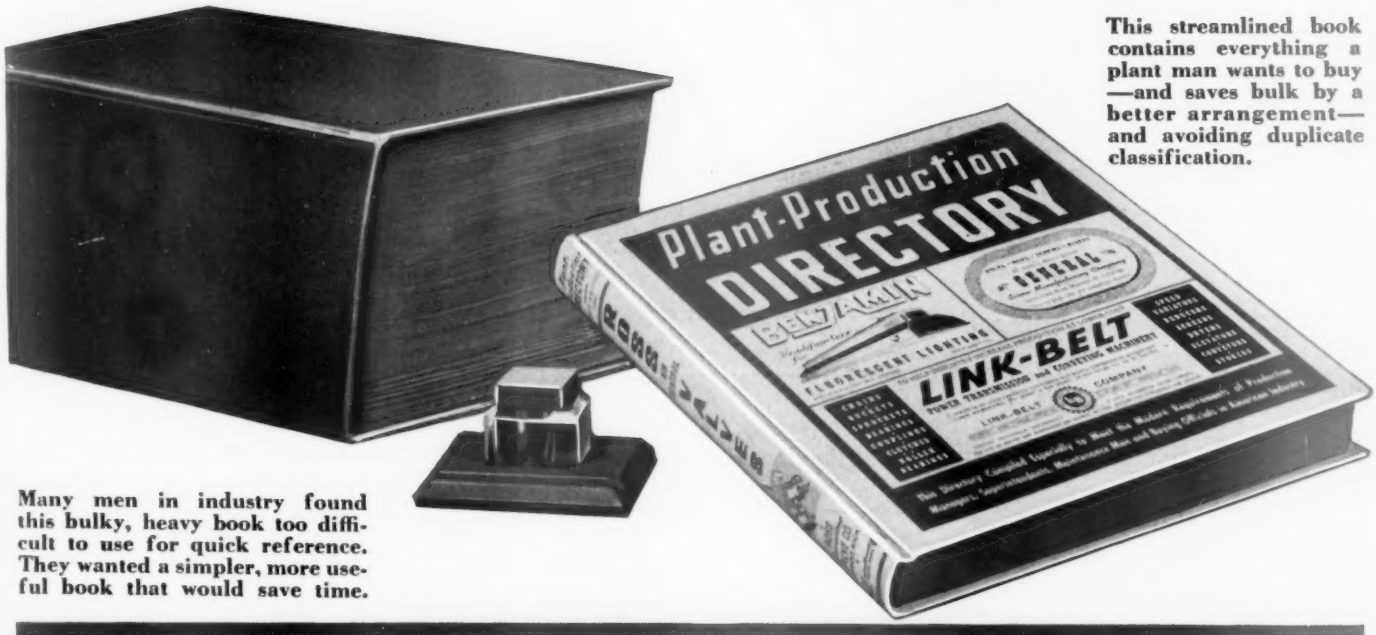
A Pure Oil engineer will help solve your lubrication problems. Write today.

THE PURE OIL COMPANY, U.S.A. PURE

BE SURE WITH PURE

There is a copy in your office–

A New Buying Guide for Industry



This streamlined book contains everything a plant man wants to buy —and saves bulk by a better arrangement— and avoiding duplicate classification.

Many men in industry found this bulky, heavy book too difficult to use for quick reference. They wanted a simpler, more useful book that would save time.

Compiled to meet the Modern Requirements of Superintendents, Production and Buying Officials in Industry

"Boy, do I like this one. 5 lbs. as against 20 lbs. Easy to use—easy for even me to carry to anyone."

NEW FEATURES:

For the busy buyer who wants to know "where to buy it" and "who makes it" this is the modern, streamlined version of what an industrial directory should be. 15 lbs. lighter, fewer pages—yet complete and accurate. Contains Mechanical Data Section with useful tables and formula in most common use. Has a compact easy-to-use Chemical section.

If you are not already a constant user as hundreds are, try it out on supply sources. Use it for a week — and you will then be a confirmed user. You are sure to like it for you can locate what you want in half the time required by the unnecessary bulky books this new directory replaces.

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333 N. Michigan Ave.

New York City Office:
205 East 42nd Street

Plant-Production DIRECTORY

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21 SOURCES

American Screw Co., Providence, R. I.
The Bristol Co., Waterbury, Conn.
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Chandler Products Corp., Cleveland, Ohio
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The Corbin Screw Corp., New Britain, Conn.
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Parker-Kalon Corp., New York, N. Y.
Pawtucket Screw Co., Pawtucket, R. I.
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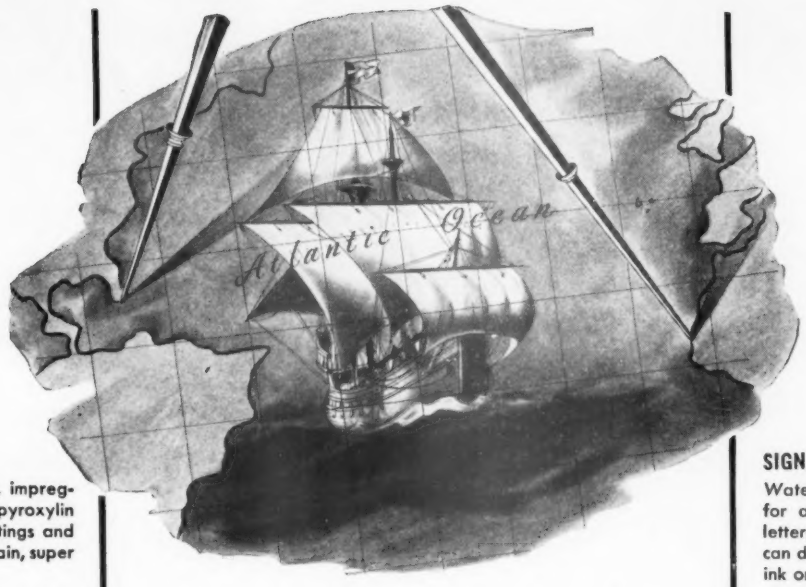

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2. PRE-LOAD SPRING assures smooth running bearings at high speeds. (Pat. 2,188,251.)

3. PULLEYS are balanced to increase belt life and give full power transmission.

4. ENDLESS DRIVE-BELTS, carefully selected for smoothness, are another aid to accuracy.

5. DYNAMIC BALANCING OF armatures and rotating parts does the utmost to prevent vibration and increase precision.

6. PRE-EXPANDING armature windings, then double-dipping in enamel and baking them, prevents centrifugal "breathing."

7. LEAD WIRES are swaged to commutators by special Dumore process to assure 100% electrical contact permanently.

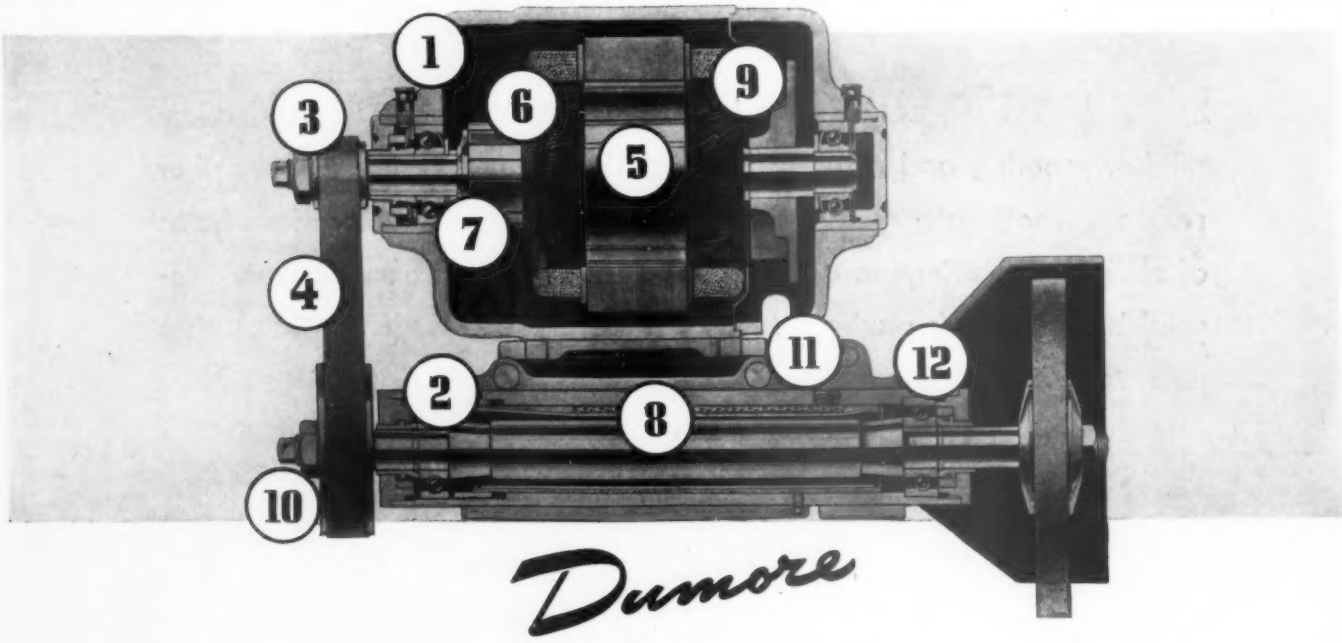
8. "FOG-OF-OIL" LUBRICATION to the quill bearings. A felt tube within the quill, extending to tapered ends of the main spindle, is held in place by a metal liner. Felt fingers at each end of the felt tube ride on the spindle surface, which is tapered to form an oil slinger. As the spindle revolves, it picks up a minute amount of oil from these fingers and the taper carries the oil along the spindle to the top, where it is thrown into the bearings in a fog. (Pat. No. 1,859,068.)

9. FAN DRAWS air in through a filter, provides blast to keep both motor and quill cool.

10. AUTOMATIC BELT TENSION gives long belt life and maximum power transmission.

11. UNIQUE FRAME CONSTRUCTION assures rigid mounting, required in precision grinding.

12. BALL BEARINGS are selected with infinite care for countless hours of vibrationless running.



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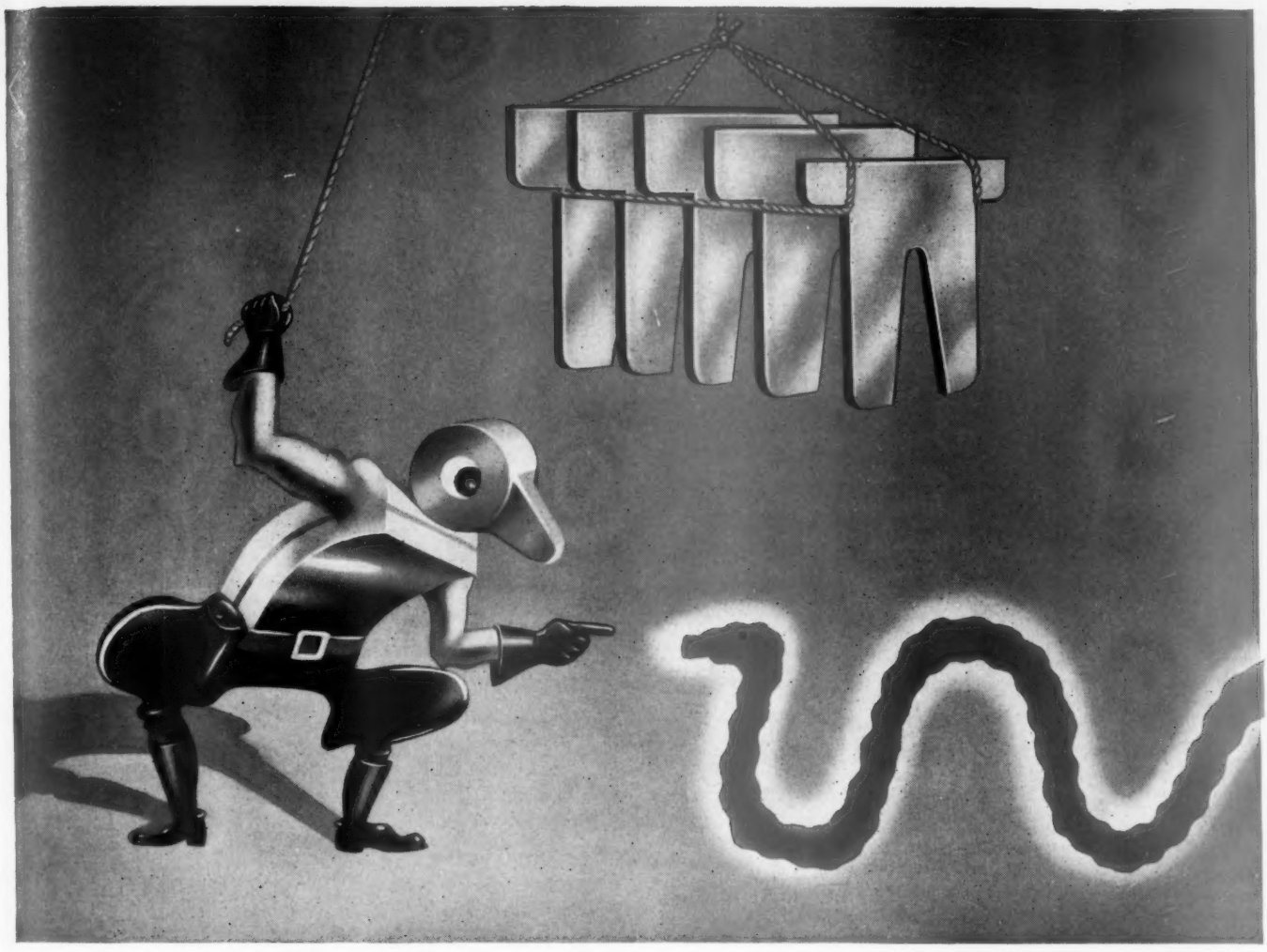
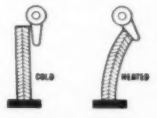


"one false move and you're Dead!"



THIS IS THE BRAIN that tells whether an overload is dangerous or not. It's Westinghouse Bi-metal. Two different metals which react differently under heat are bonded together. Dangerous overloads cause this Bi-metal to bend, tripping the interrupting mechanism, opening the circuit.

THIS IS THE BRAWN that quenches the arc. Made up of parallel metal plates in the form of a grid, it draws the arc into the chamber, divides it into segments and smothers it between the plates . . . it all happens in the space of half a cycle!

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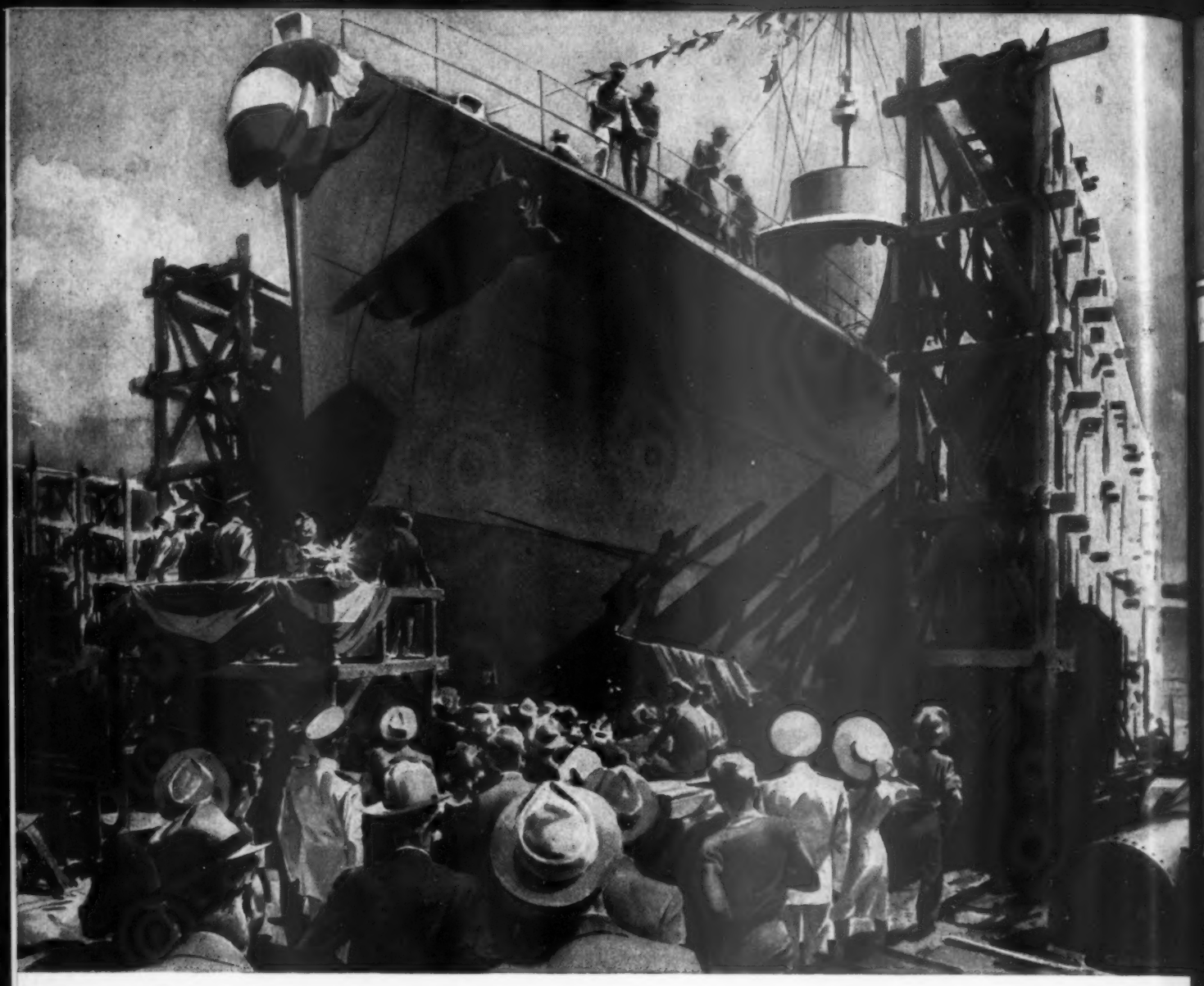

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